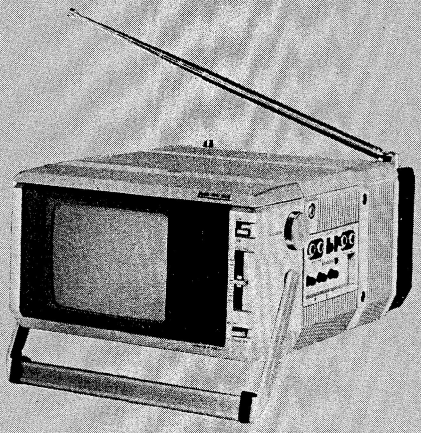
SERVICE DATA
FILE NO.020-355
PAL SYSTEM

TOSHIBA

COLOUR TELEVISION/ BATTERY CASE

C-500/BK-500



SPECIFICATIONS

COLOUR TELEVISION C-500		
INPUT POWER RATING:	25 watts (nominal), AC 220 volts 50Hz 14 watts (nominal), DC 12 volts	
AERIAL INPUT IMPEDANCE:	75 ohm unbalanced type for VHF and UHF	
RECEIVING CHANNELS:	Any of VHF channels	channels 2 to 12
	Any of UHF channels	channels 21 to 69
INTERMEDIATE FREQUENCIES:	Picture I-F carrier frequency	38.9 MHz
	Sound I-F carrier frequency	33.4 MHz
	Colour sub-carrier frequency	34.47 MHz
CHASSIS CONSTRUCTION:	IC-Solid State Chassis	
PICTURE TUBE:	140DCB22 (Y), 11.4 cm (measured on diagonal of viewable picture area) 55° Deflection	
SOUND OUTPUT:	0.32 watts (at 10% harmonic distortion, Max. 0.35 watts)	
SPEAKER:	Round 7.7 cm	
CABINET:	Plastic, Portable	
DIMENSION:	Height	12.5 cm
	Width	21.1 cm
	Depth	27.4 cm
WEIGHT (NET):	3.4 kg	
AERIAL:	VHF and UHF telescopic (attached), UHF Loop Aerial	
AUX. TERMINAL:	Earphone Jack	
FEATURES:	AFC, Electronic Tuning, AC/DC Operation, MONITOR PLUG.	
CHASSIS NUMBER:	TAP-010	
BATTERY CASE BK-500		
OUTPUT VOLTAGE:	DC12V	
DIMENSION:	Height	5.8 cm
	Width	18 cm
	Depth	25.4 cm
WEIGHT:	0.52 kg	

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 13.3kv at zero beam current (minimum brightness) under a 240v AC power source. The high voltage must not, under any circumstances, exceed 13.8 kv.
   Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure on page 15 of this manual. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

1. Potentials as high as 12,000 volts are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
   1. Servicing should not be attempted by anyone who is not throughly familiar with the precautions necessary when working on high-voltage equipment.
   2. Always discharge the picture tube anode to the receiver chassis to keep off the shock hazard before removing the anode cap.
   3. Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated andif broken, glass fragments will be violently expelled.
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10 mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and the aprts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

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SERVICE NOTE

FUSE REPLACEMENT OF CAR BATTERY CORD PLUG
If the fuse in the car battery cord plug blows, replace it with a new 5A fuse as shown below. Loosen the tip of the plug to remove.

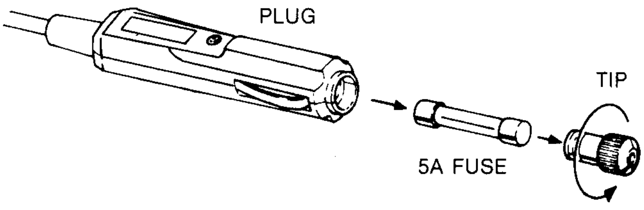

PLUG
TIP
5A FUSE

Figure 1.

1. FRONT SIDE AND REAR CONTROL VIEWS

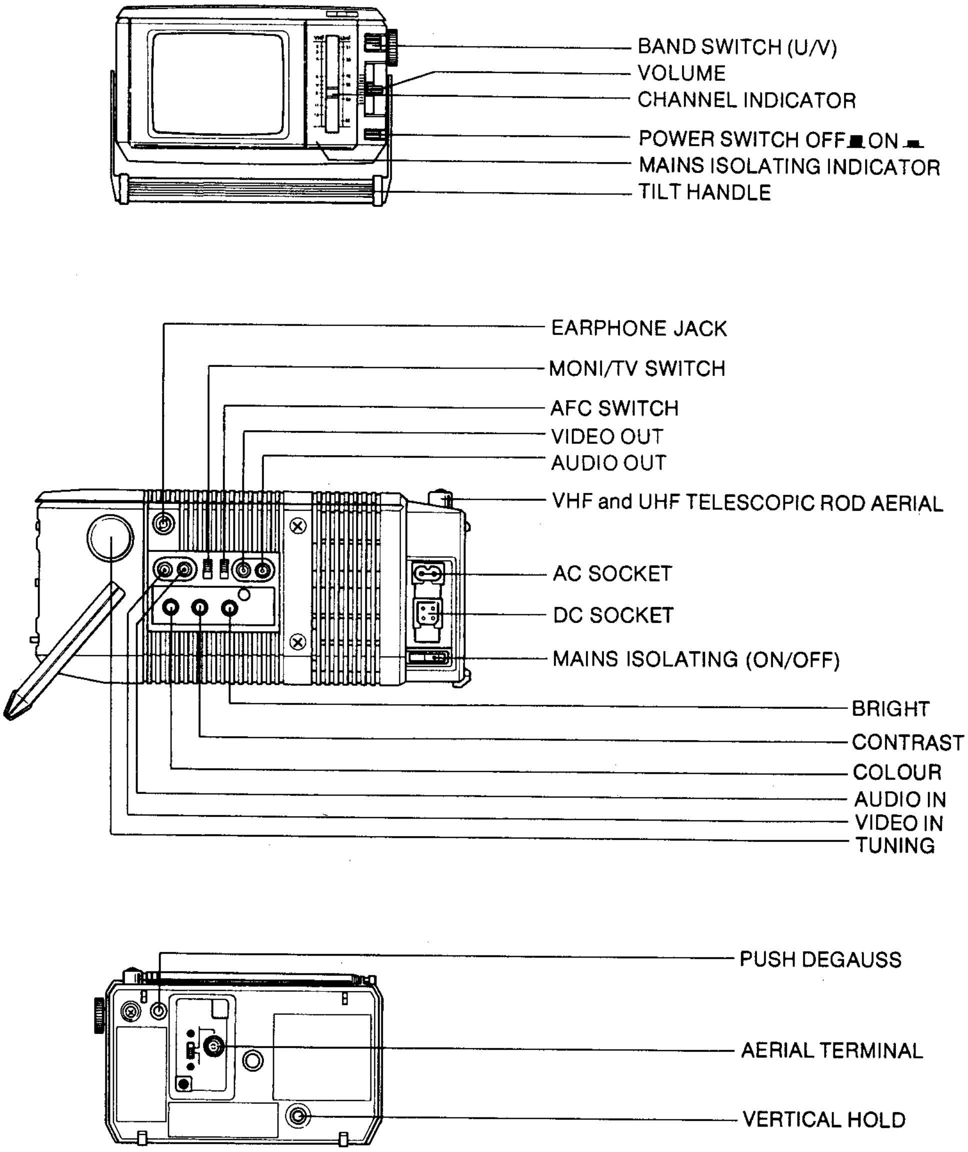
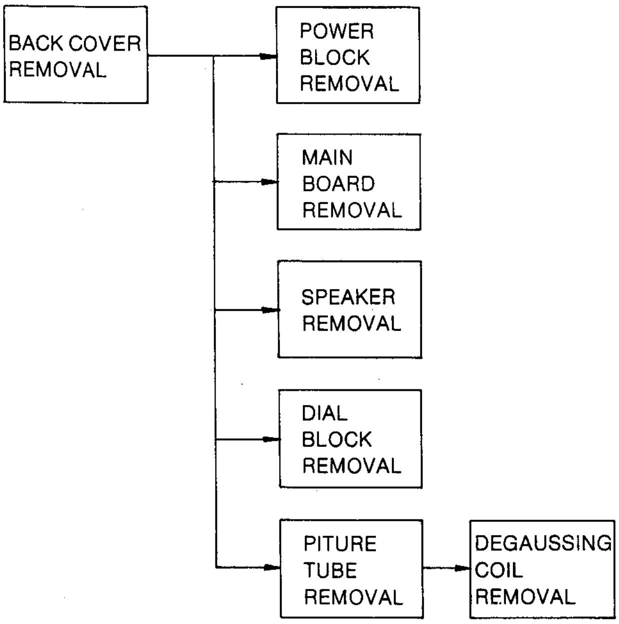

BAND SWITCH (U/V)
VOLUME
CHANNEL INDICATOR
POWER SWITCH OFF ■ ON ▬
MAINS ISOLATING INDICATOR
TILT HANDLE
EARPHONE JACK
MONI/TV SWITCH
AFC SWITCH
VIDEO OUT
AUDIO OUT
VHF and UHF TELESCOPIC ROD AERIAL
AC SOCKET
DC SOCKET
MAINS ISOLATING (ON/OFF)
BRIGHT
CONTRAST
COLOUR
AUDIO IN
VIDEO IN
TUNING
PUSH DEGAUSS
AERIAL TERMINAL
VERTICAL HOLD

Figure 2. Front, Side and Rear Controls

2. MECHANICAL DISASSEMBLIES

2-1. PROCEDURES

Take the proper procedures referring the following table when disassembling the set.



BACK COVER REMOVAL
POWER BLOCK REMOVAL
MAIN BOARD REMOVAL
SPEAKER REMOVAL
DIAL BLOCK REMOVAL
PITURE TUBE REMOVAL
DEGAUSSING COIL REMOVAL

2-2. BACK COVER REMOVAL (See figure 3.)

1. Pull out the plug from the set.
2. Remove back cover retaining screws Ⓐ and Ⓑ and one antenna terminal retaining screw Ⓒ.

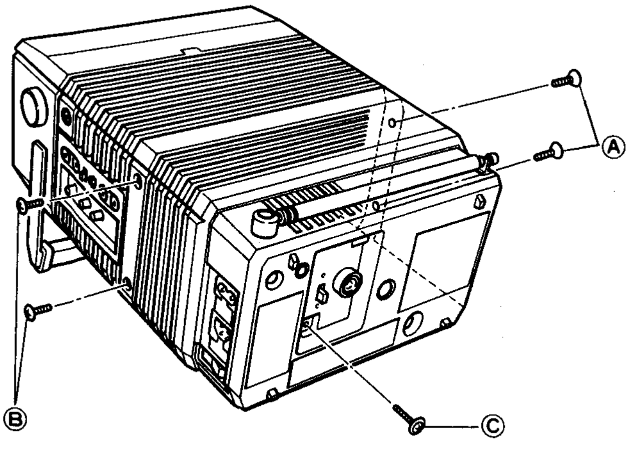


Figure 3.

2-3. POWER BLOCK REMOVAL (See figures 4, 5 and 6.)

1. Remove the antenna terminal retaining screw Ⓓ from the heat sink.
2. Remove the deflecting yoke lead wires and power cord from wire clamp Ⓔ.
3. Pull out degausing coil connector Ⓕ.

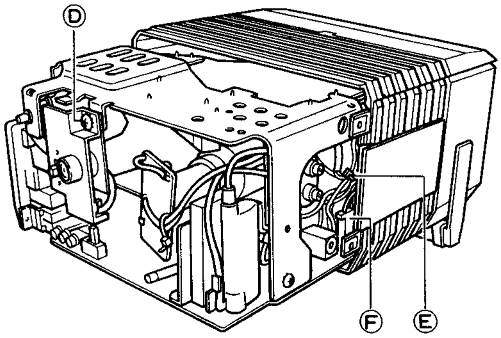


Figure 4

4. Remove three power block retaining screws Ⓖ and Ⓗ.
5. While rotating the power bock in the direction of the arrow, remove the lead wires from wire clamp Ⓘ.
6. Carefully pull out the main P.C. board backward.
7. Carefully pull out control unit Ⓙ backward.

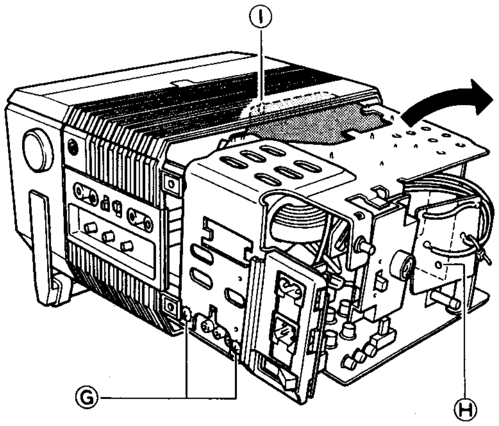


Figure 5.

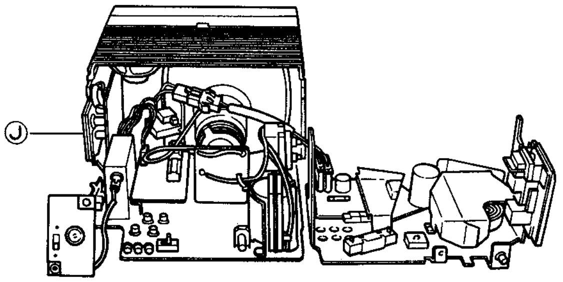


Figure 6.

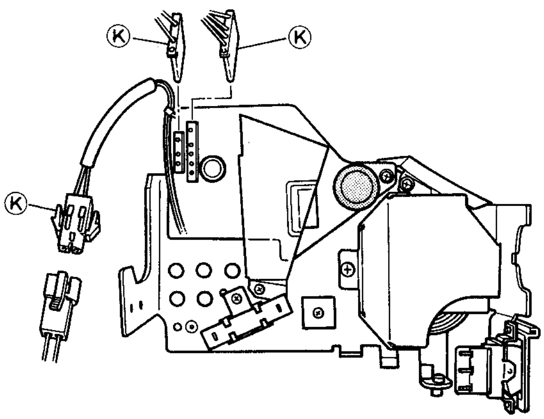


Figure 7.

8. Unplug three power unit plugs Ⓚ (figure 7).

- When the procedures to item 7 are carried out, the unit can be serviced.
- When the power is supplied, do not allow the antenna terminal circuit to come in contact with the unit.

2-4. MAIN BOARD REMOVAL (See figure 8.)

1. Pull out 6 main P.C. board connectors Ⓜ (deflecting yoke connector; 4 and speaker connector; 1p (figure 7). nector; 1 (figure 7).
2. Remove the CRT grounding wire from the CRT socket P.C. board using a soldering copper.
3. Remove the CRT socket P.C. board from the CRT neck.

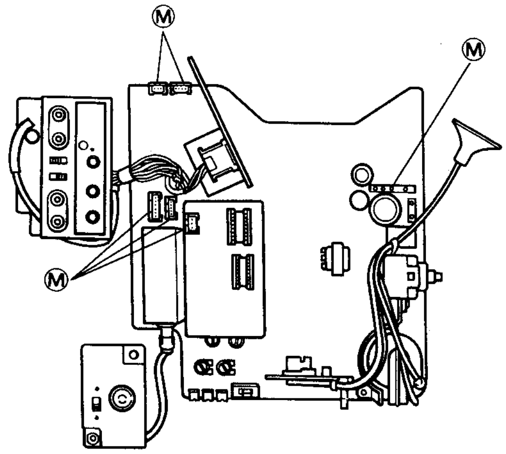


Figure 8.

2-5. SPEAKER REMOVAL (See figure 9.)

1. Remove year phone jack nut Ⓟ.
2. Pull out the speaker.

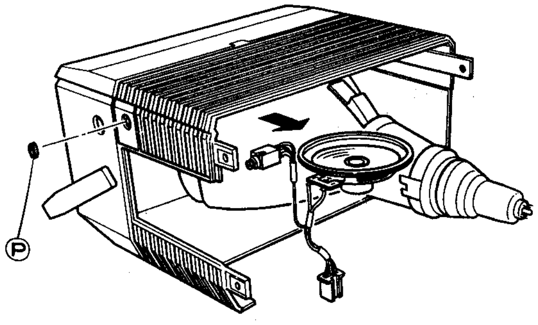


Figure 9.

2-6. DIAL BLOCK REMOVAL (See figure 10.)

1. Remove volume knob.
2. Remove dial knob Ⓝ and 2 screws Ⓞ.
   The dial block can be removed.

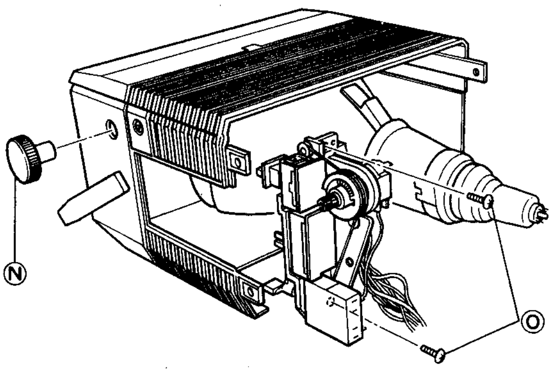


Figure 10.

2-7. PICTURE TUBE REMOVAL (See figure 11.)

1. Remove four screws Ⓠ as shown in the figure.

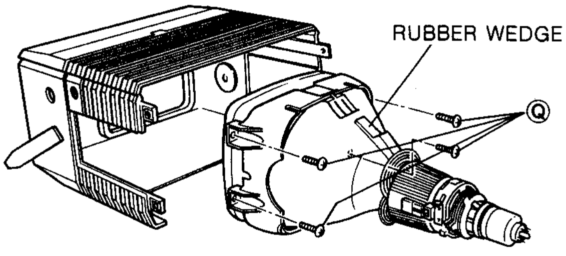


Figure 11.

2-8. DEGAUSING COIL REMOVAL

1. As there is no stopper, the degausing coil can be removed easily.

3-1. MAIN BOARD TOP VIEW

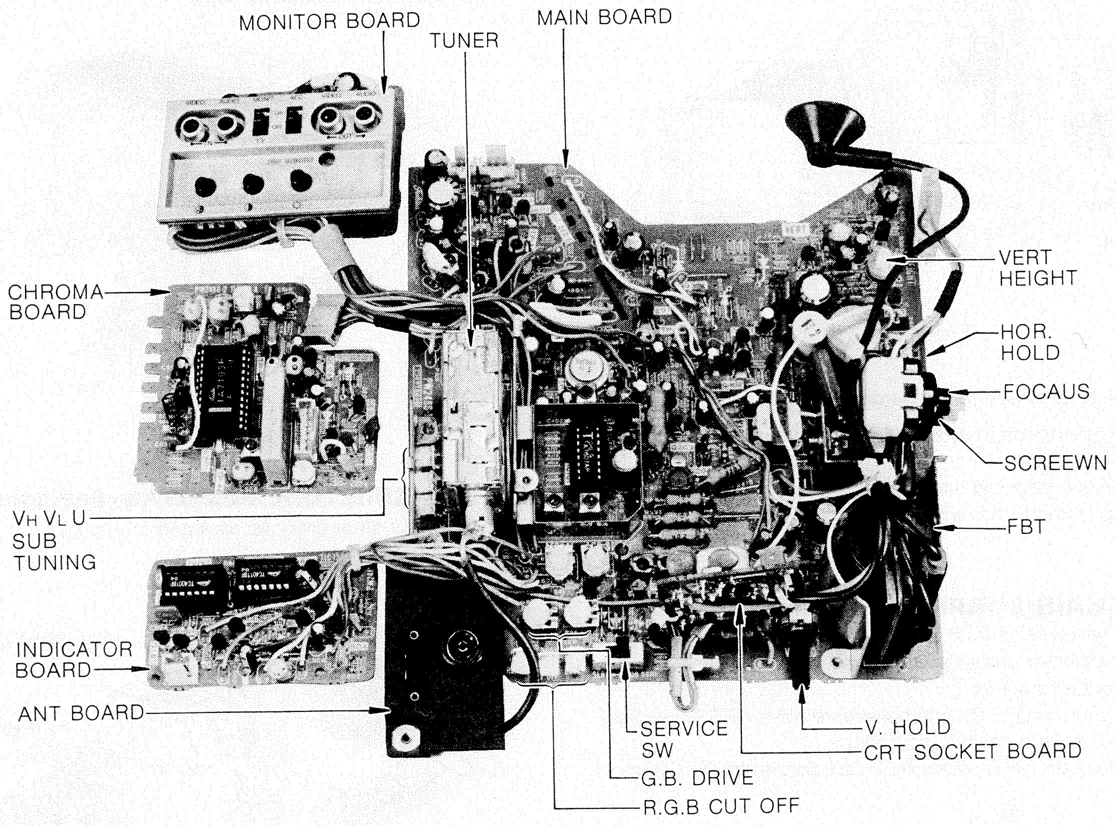

MONITOR BOARD
TUNER
MAIN BOARD
CHROMA BOARD
VERT HEIGHT
HOR. HOLD
FOCAUS
SCREEWN
FBT
VH VL U SUB TUNING
INDICATOR BOARD
ANT BOARD
SERVICE SW
G.B. DRIVE
R.G.B CUT OFF
V. HOLD
CRT SOCKET BOARD

Figure 12. Main Board Top View

3-2. POWER BLOCK TOP VIEW

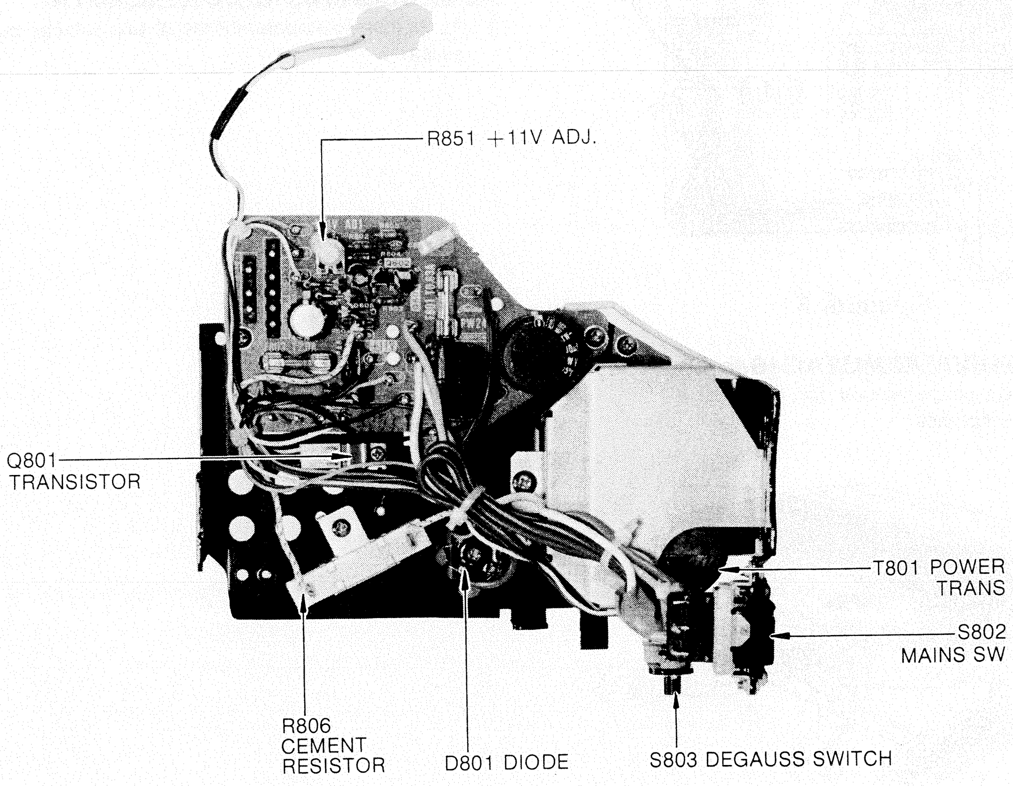
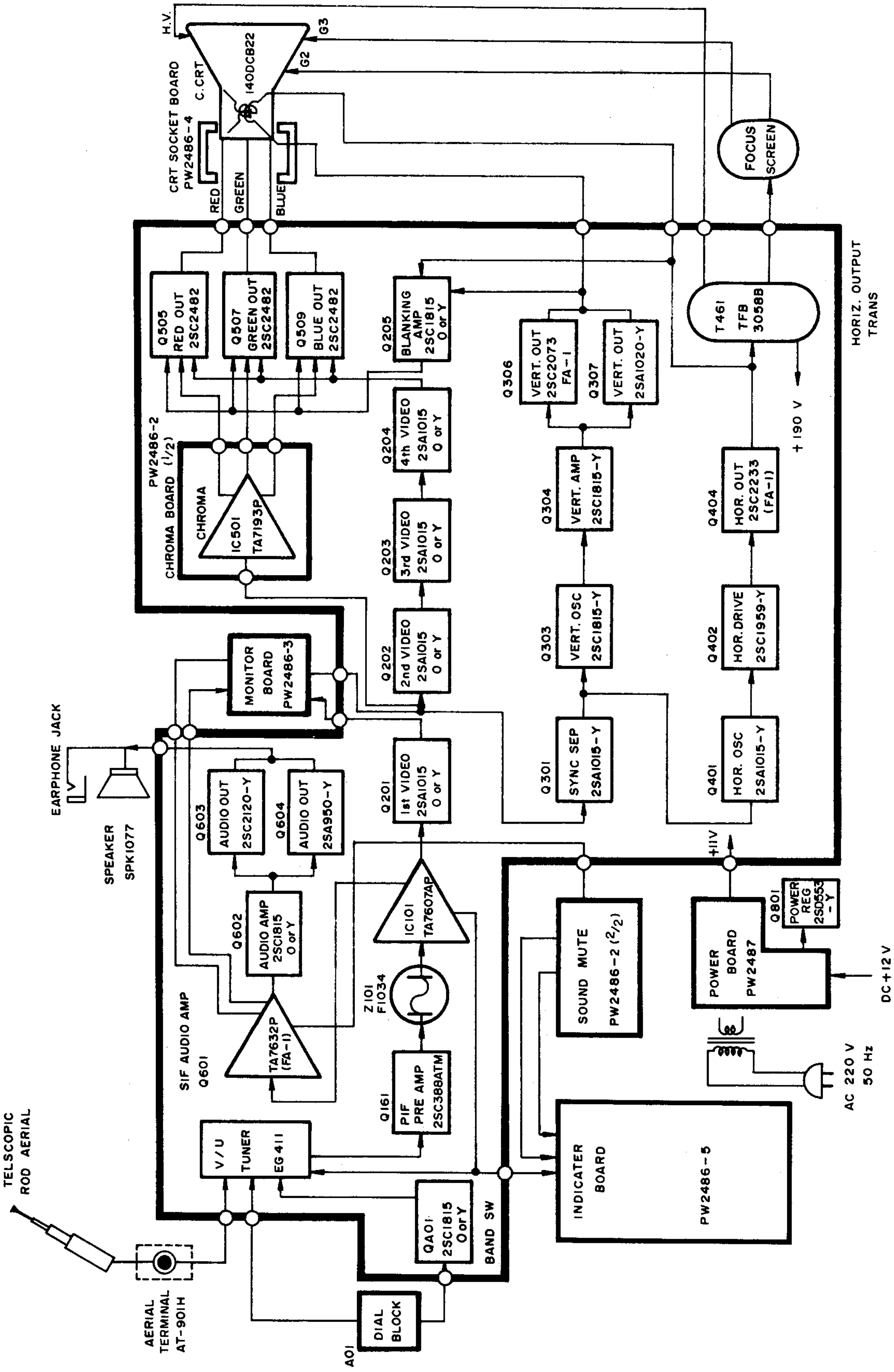

R851 +11V ADJ.
Q801 TRANSISTOR
T801 POWER TRANS
S802 MAINS SW
R806 CEMENT RESISTOR
D801 DIODE
S803 DEGAUSS SWITCH

Figure 13. POWER BLOCK TOP VIEW

4. BLOCK DIAGRAM


H.V.
G3
G2
14ODCB22
C.CRT
CRT SOCKET BOARD
PW2486-4
RED
GREEN
BLUE
FOCUS
SCREEN
Q505
RED OUT
2SC2482
Q507
GREEN OUT
2SC2482
Q509
BLUE OUT
2SC2482
Q205
BLANKING AMP
2SC1815
O or Y
Q306
VERT. OUT
2SC2073
FA-1
Q307
VERT. OUT
2SA1020-Y
T461
TFB
3058B
HORIZ. OUTPUT
TRANS
+190 V
PW2486-2
(1/2)
CHROMA BOARD
CHROMA
IC501
TA7193P
Q204
4th VIDEO
2SA1015
O or Y
Q203
3rd VIDEO
2SA1015
O or Y
Q202
2nd VIDEO
2SA1015
O or Y
Q201
1st VIDEO
2SA1015
O or Y
Q304
VERT. AMP
2SC1815-Y
Q303
VERT. OSC
2SC1815-Y
Q301
SYNC SEP
2SA1015-Y
Q404
HOR. OUT
2SC2233
(FA-1)
Q402
HOR. DRIVE
2SC1959-Y
Q401
HOR. OSC
2SA1015-Y
MONITOR
BOARD
PW2486-3
EARPHONE JACK
SPEAKER
SPK1077
Q603
AUDIO OUT
2SC2120-Y
Q604
AUDIO OUT
2SA950-Y
Q602
AUDIO AMP
2SC1815
O or Y
SIF AUDIO AMP
Q601
TA7632P
(FA-1)
Z101
F1034
IC101
TA7607AP
Q161
PIF
PRE AMP
2SC388ATM
SOUND MUTE
PW2486-2 (2/2)
+11V
Q801
POWER
REG
2SD553
-Y
POWER
BOARD
PW2487
DC+12 V
AC 220 V
50 Hz
TELSCOPIC
ROD AERIAL
V/U
TUNER
EG411
QA01
2SC1815
O or Y
BAND SW
INDICATER
BOARD
PW2486-5
AERIAL
TERMINAL
AT-901H
DIAL
BLOCK
A01

5. TROUBLESHOOTING CHART

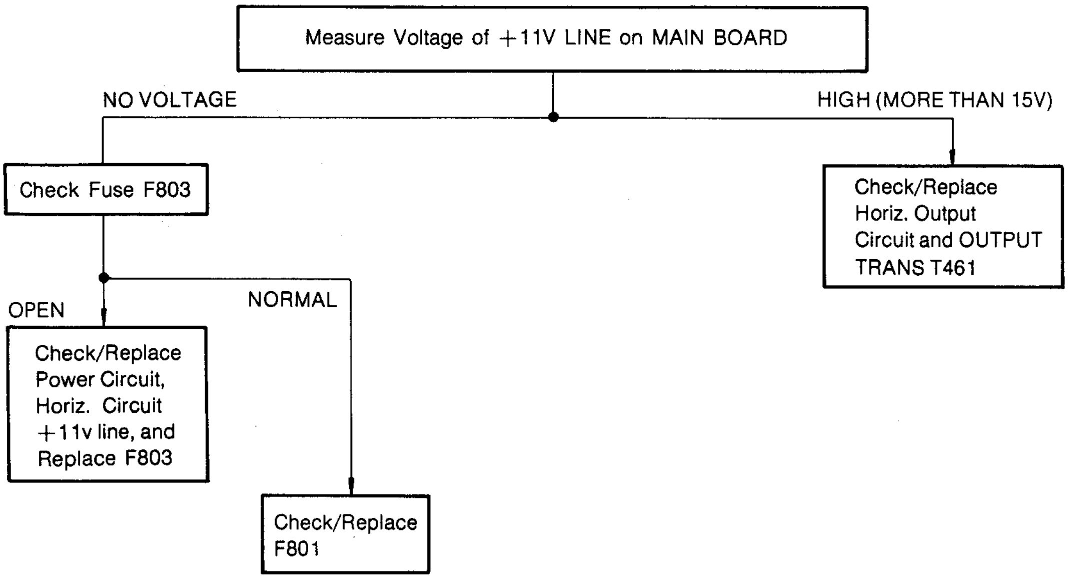
The following charts are devoted to troubleshooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.

In order to utilize the chart (fault trees), firstly establish the complaint, i.e. – No Raster, No Sound.

Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

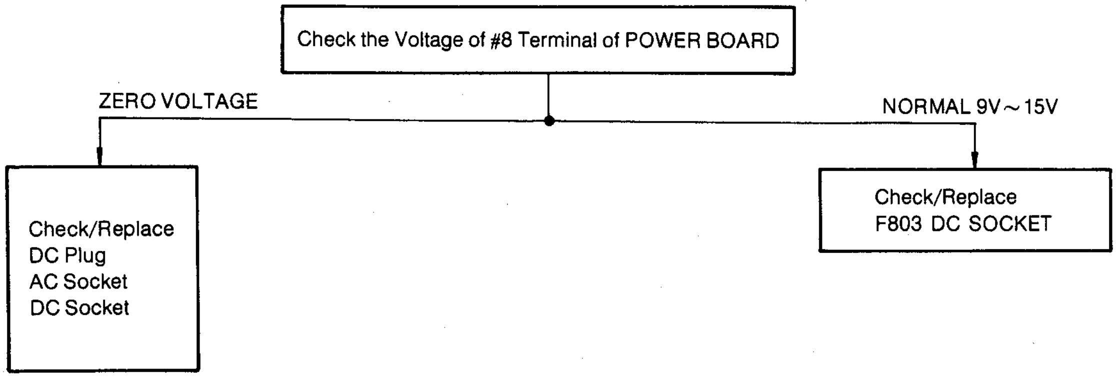
5-1. NO RASTER AND NO SOUND

(i) AC Operation



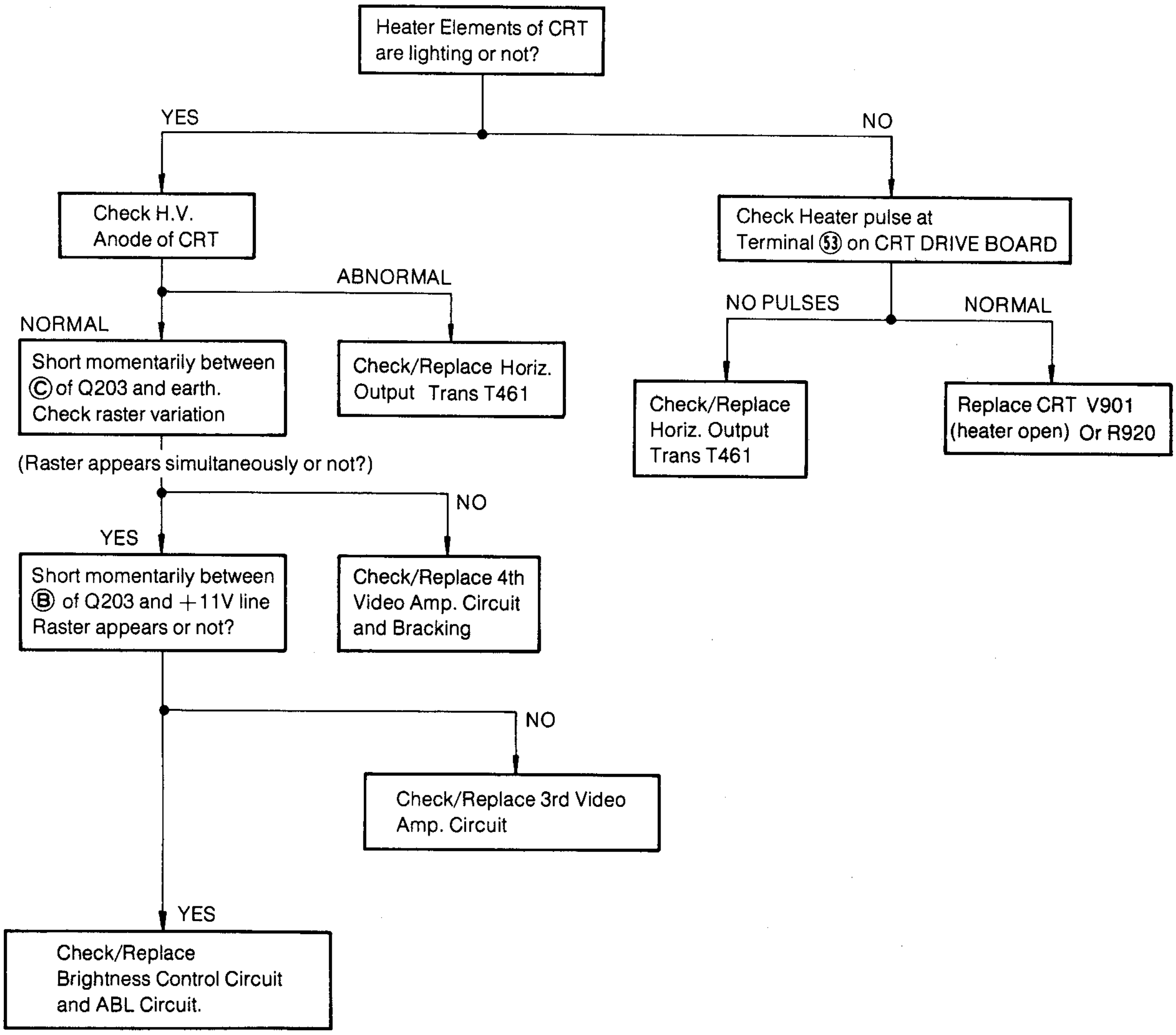
Measure Voltage of +11V LINE on MAIN BOARD
NO VOLTAGE
HIGH (MORE THAN 15V)
Check Fuse F803
Check/Replace Horiz. Output Circuit and OUTPUT TRANS T461
OPEN
NORMAL
Check/Replace Power Circuit, Horiz. Circuit +11v line, and Replace F803
Check/Replace F801

(ii) DC Operation (AC Operation OK)

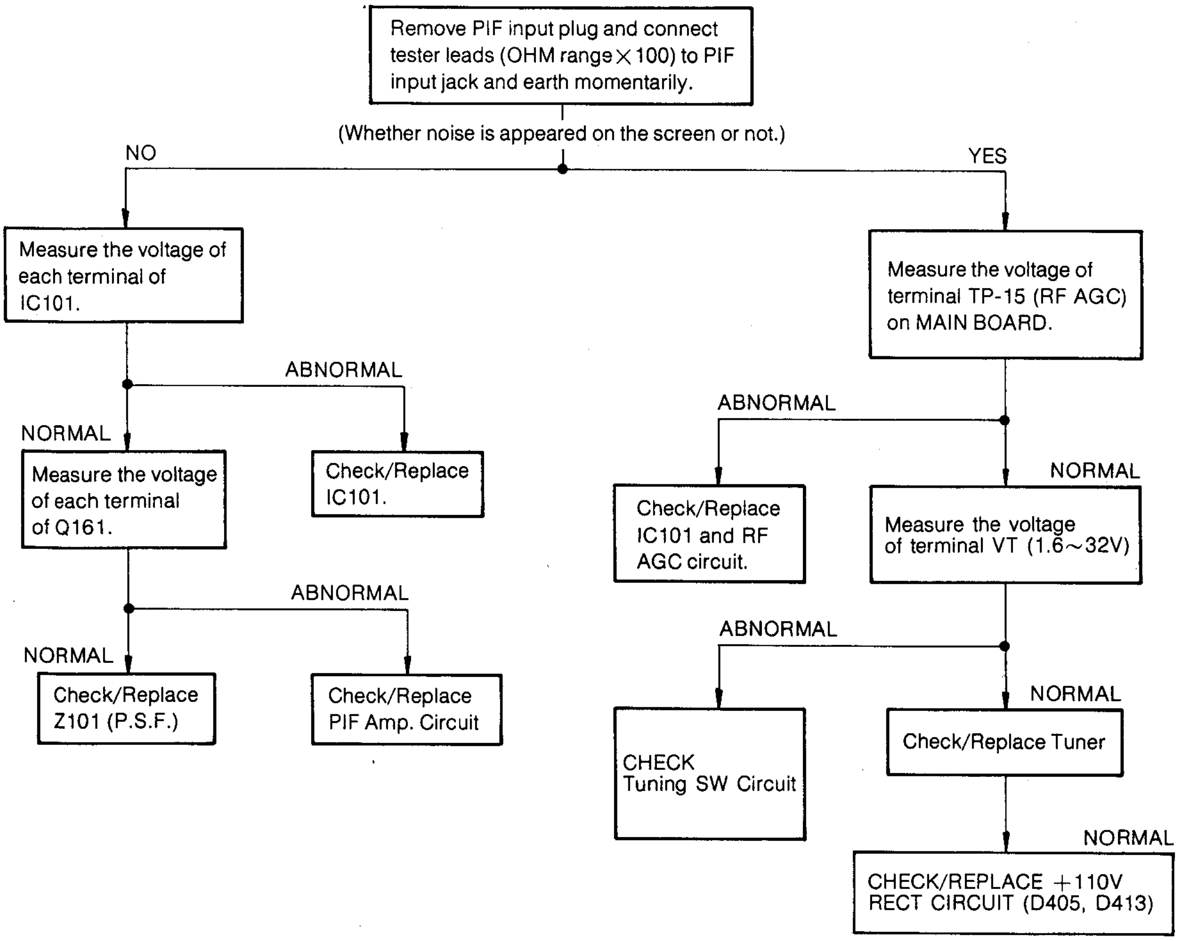


Check the Voltage of #8 Terminal of POWER BOARD
ZERO VOLTAGE
NORMAL 9V～15V
Check/Replace DC Plug AC Socket DC Socket
Check/Replace F803 DC SOCKET

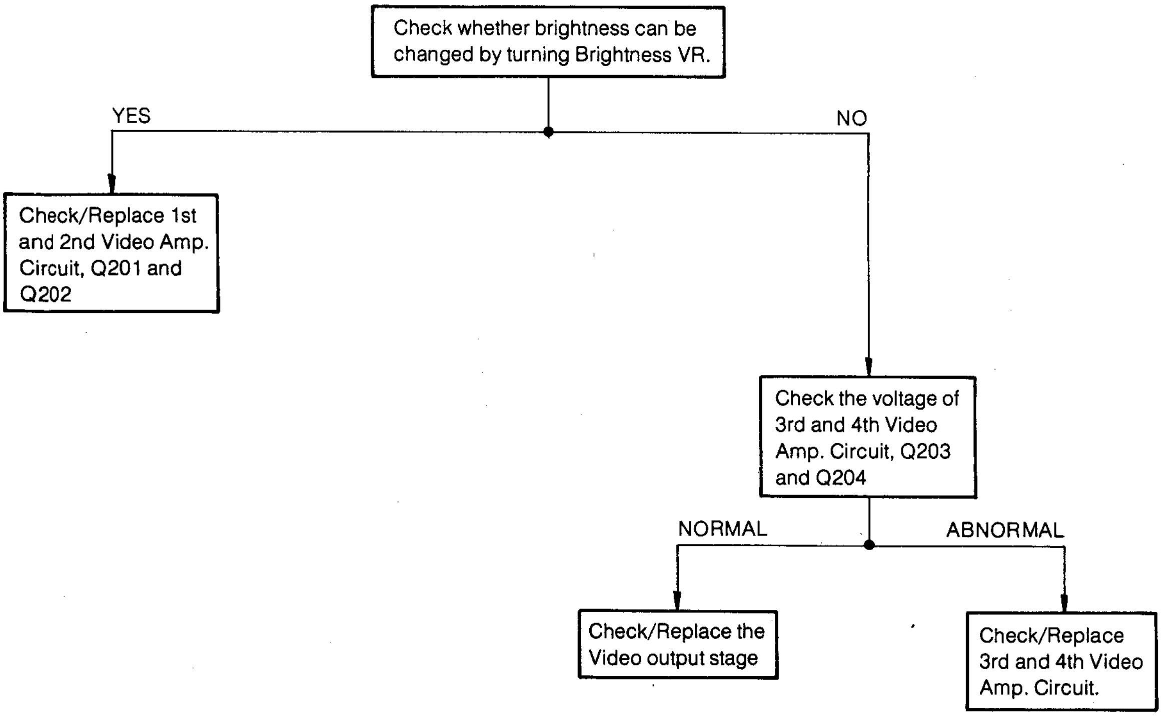
5-2. NO RASTER (SOUND OK)


Heater Elements of CRT are lighting or not?
YES
NO
Check H.V. Anode of CRT
ABNORMAL
NORMAL
Short momentarily between Ⓒ of Q203 and earth. Check raster variation
Check/Replace Horiz. Output Trans T461
(Raster appears simultaneously or not?)
NO
YES
Short momentarily between Ⓑ of Q203 and +11V line Raster appears or not?
Check/Replace 4th Video Amp. Circuit and Bracking
NO
Check/Replace 3rd Video Amp. Circuit
YES
Check/Replace Brightness Control Circuit and ABL Circuit.
Check Heater pulse at Terminal (53) on CRT DRIVE BOARD
NO PULSES
NORMAL
Check/Replace Horiz. Output Trans T461
Replace CRT V901 (heater open) Or R920

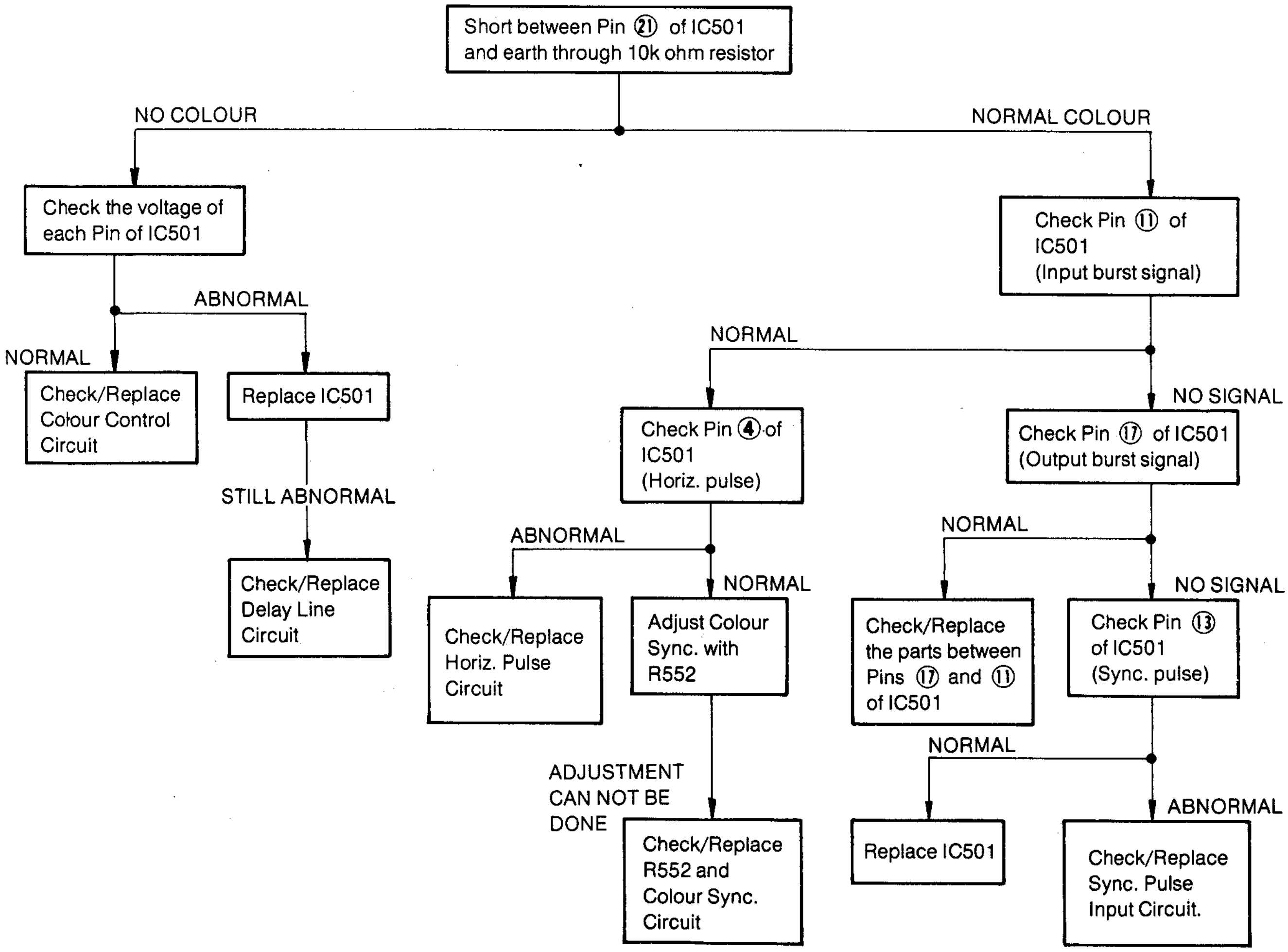
5-3. NO PICTURE (RASTER REMAIN) AND NO SOUND


Remove PIF input plug and connect tester leads (OHM range × 100) to PIF input jack and earth momentarily.
(Whether noise is appeared on the screen or not.)
NO
YES
Measure the voltage of each terminal of IC101.
ABNORMAL
NORMAL
Measure the voltage of each terminal of Q161.
Check/Replace IC101.
ABNORMAL
NORMAL
Check/Replace Z101 (P.S.F.)
Check/Replace PIF Amp. Circuit
Measure the voltage of terminal TP-15 (RF AGC) on MAIN BOARD.
ABNORMAL
NORMAL
Check/Replace IC101 and RF AGC circuit.
Measure the voltage of terminal VT (1.6~32V)
ABNORMAL
NORMAL
CHECK Tuning SW Circuit
Check/Replace Tuner
NORMAL
CHECK/REPLACE +110V RECT CIRCUIT (D405, D413)

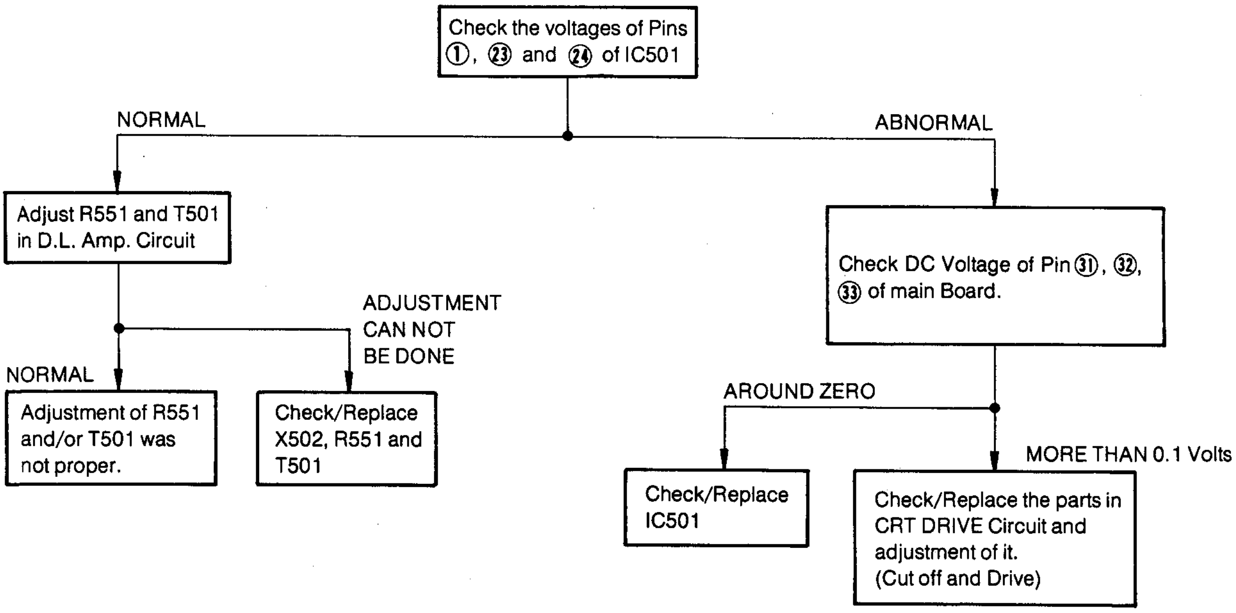
5-4. NO PICTURE (RASTER AND SOUND OK)


Check whether brightness can be changed by turning Brightness VR.
YES
NO
Check/Replace 1st and 2nd Video Amp. Circuit, Q201 and Q202
Check the voltage of 3rd and 4th Video Amp. Circuit, Q203 and Q204
NORMAL
ABNORMAL
Check/Replace the Video output stage
Check/Replace 3rd and 4th Video Amp. Circuit.

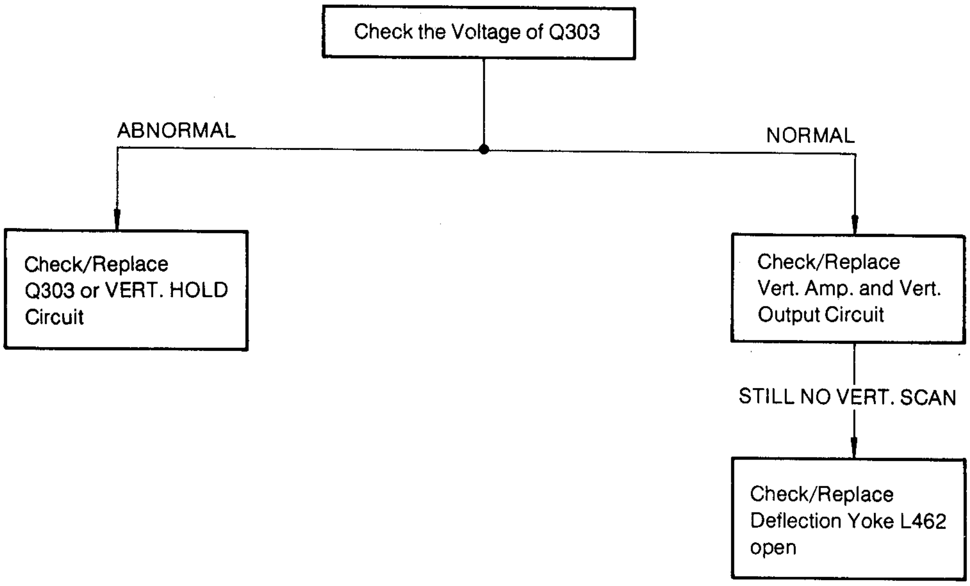
5.5 NO COLOUR


Short between Pin ㉑ of IC501 and earth through 10k ohm resistor
NO COLOUR
NORMAL COLOUR
Check the voltage of each Pin of IC501
ABNORMAL
NORMAL
Check/Replace Colour Control Circuit
Replace IC501
STILL ABNORMAL
Check/Replace Delay Line Circuit
Check Pin ⑪ of IC501 (Input burst signal)
NORMAL
NO SIGNAL
Check Pin ④ of IC501 (Horiz. pulse)
ABNORMAL
NORMAL
Check/Replace Horiz. Pulse Circuit
Adjust Colour Sync. with R552
ADJUSTMENT CAN NOT BE DONE
Check/Replace R552 and Colour Sync. Circuit
Check Pin ⑰ of IC501 (Output burst signal)
NORMAL
NO SIGNAL
Check/Replace the parts between Pins ⑰ and ⑪ of IC501
Check Pin ⑬ of IC501 (Sync. pulse)
NORMAL
ABNORMAL
Replace IC501
Check/Replace Sync. Pulse Input Circuit.

5-6. SPECIFIC TINTED COLOUR


Check the voltages of Pins ①, ㉓ and ㉔ of IC501
NORMAL
ABNORMAL
Adjust R551 and T501 in D.L. Amp. Circuit
ADJUSTMENT CAN NOT BE DONE
NORMAL
Adjustment of R551 and/or T501 was not proper.
Check/Replace X502, R551 and T501
Check DC Voltage of Pin ㉛, ㉜, ㉝ of main Board.
AROUND ZERO
MORE THAN 0.1 Volts
Check/Replace IC501
Check/Replace the parts in CRT DRIVE Circuit and adjustment of it. (Cut off and Drive)

5-7. NO VERT. SCAN (ONE HORIZ, LINE RASTER)


Check the Voltage of Q303
ABNORMAL
NORMAL
Check/Replace Q303 or VERT. HOLD Circuit
Check/Replace Vert. Amp. and Vert. Output Circuit
STILL NO VERT. SCAN
Check/Replace Deflection Yoke L462 open

5-8. OUT OF VERT. SYNC. AND HORIZ. SYNC.

Check/Replace Sync. Sep. Circuit from Ⓔ of Q202 to Ⓑ of Q301.

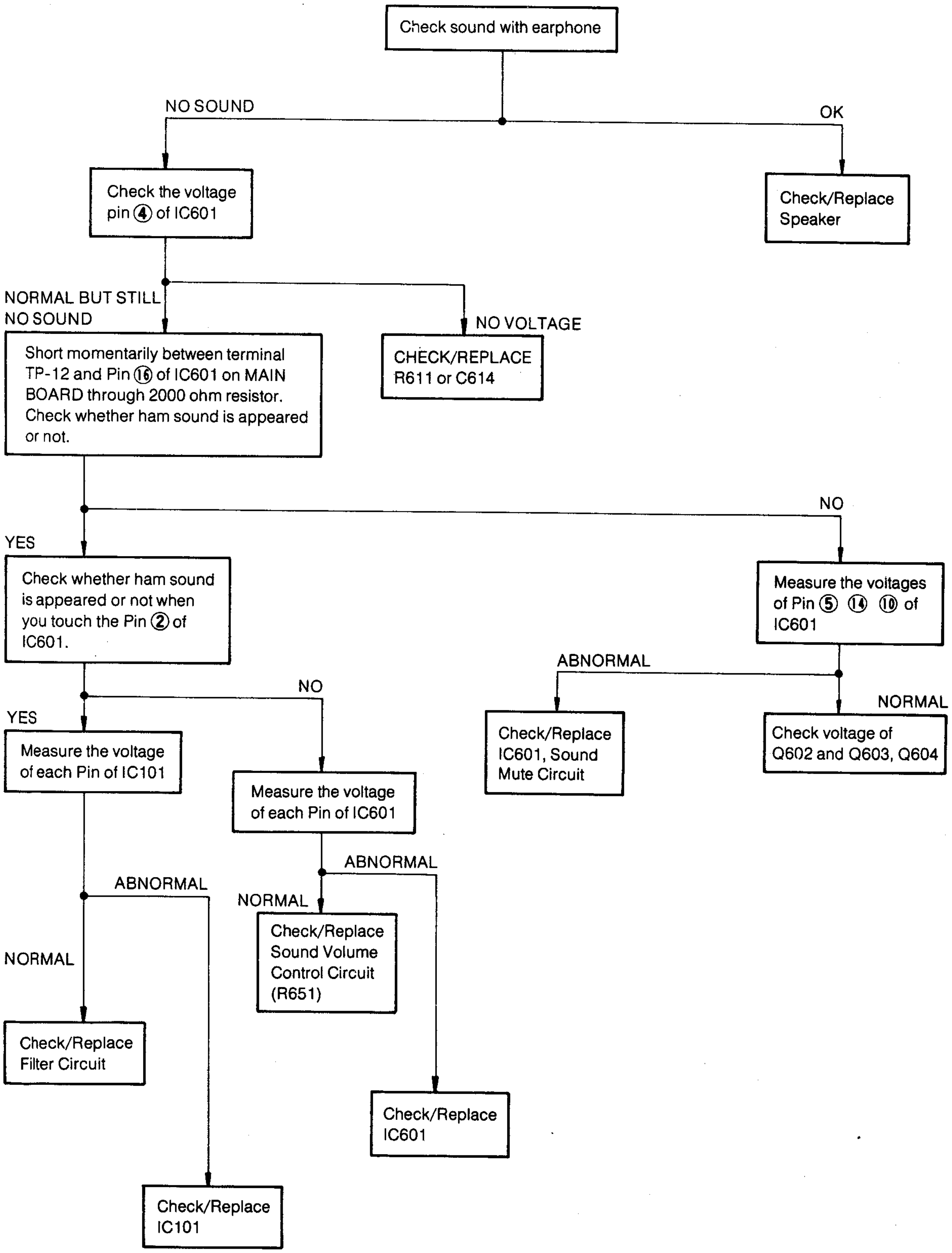
5-9. OUT OF VERT. SYNC.

Check/Replace Vert. OSC. Circuit and Vert. Hold Circuit, Q301.

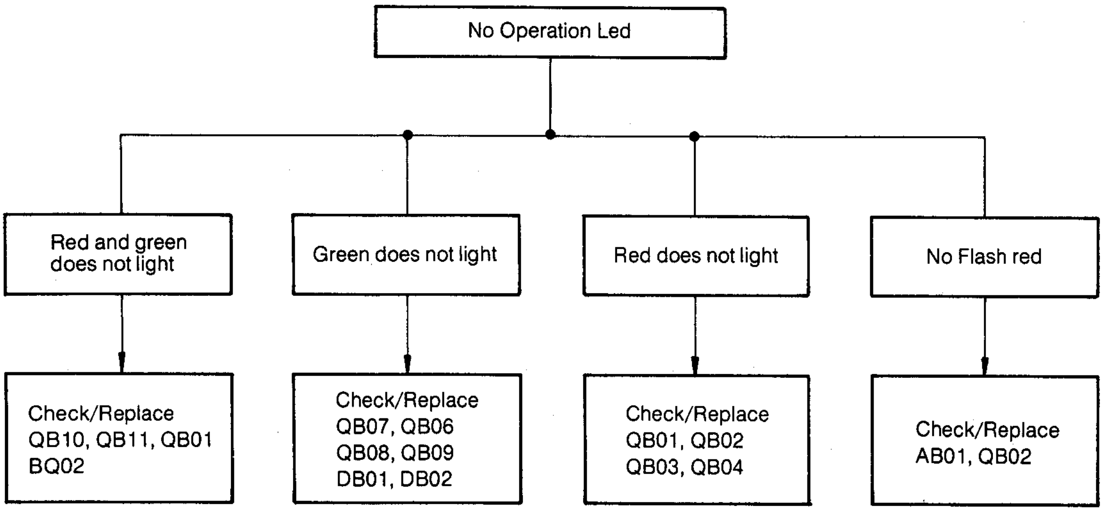
5-10. OUT OF HORIZ. SYNC.

Check/Replace Horiz. OSC Circuit (Q401), Horiz. Hold Circuit (L401) and AFC Circuit.

5-11. NO SOUND (PICTURE OK)


Check sound with earphone
NO SOUND
OK
Check the voltage pin ④ of IC601
Check/Replace Speaker
NORMAL BUT STILL NO SOUND
NO VOLTAGE
Short momentarily between terminal TP-12 and Pin ⑯ of IC601 on MAIN BOARD through 2000 ohm resistor. Check whether ham sound is appeared or not.
CHECK/REPLACE R611 or C614
NO
YES
Check whether ham sound is appeared or not when you touch the Pin ② of IC601.
Measure the voltages of Pin ⑤ ⑭ ⑩ of IC601
ABNORMAL
NO
YES
NORMAL
Measure the voltage of each Pin of IC101
Check/Replace IC601, Sound Mute Circuit
Check voltage of Q602 and Q603, Q604
Measure the voltage of each Pin of IC601
ABNORMAL
ABNORMAL
NORMAL
NORMAL
Check/Replace Sound Volume Control Circuit (R651)
Check/Replace Filter Circuit
Check/Replace IC601
Check/Replace IC101

5-12. NO OPERATION OF INDICATOR


No Operation Led
Red and green does not light
Green does not light
Red does not light
No Flash red
Check/Replace QB10, QB11, QB01 BQ02
Check/Replace QB07, QB06 QB08, QB09 DB01, DB02
Check/Replace QB01, QB02 QB03, QB04
Check/Replace AB01, QB02

6. INSTALLATION AND SERVICE ADJUSTMENTS

6-1. GENERAL

In the majority of cases, a colour television receiver will need only slight touch-up adjustment upon installation.

Check the basic characteristics such as height, vertical sync., horizontal sync. and focus.

Observe the picture for good balck and white details without objectionable colour shading. If colour shading is evident, demagnetize the receiver.

If colour shading still persists, perform purity and convergence adjustments. This should be all that is necessary to achieve optimum receiver performance.

6-2. VERTICAL OSCILLATOR ADJUSTMENT

If the picture moves up or down on the screen, adjust the VERTICAL HOLD control (R351) at the rear of the receiver.

6-3. HORIZONTAL OSCILLATOR ADJUSTMENT

If there is an indication of unstable horizontal sync., adjust the HORIZONTAL HOLD (L401) shown in figure (12) to correct the condition. Adjust the control to the centre of the pull-in range.

6-4. +11 VOLT POWER SUPPLY ADJUSTMENT

CAUTION: +B voltage closely relates to the high voltage. To prevent hazardous X-RAY RADIATION, the +B voltage must be properly adjusted to +11 volts.

1. Tune in an active channel. Adjust the BRIGHTNESS AND CONTRAST controls for normal picture.
2. Check that AC power line voltage is normal (AC 220 volts 50 Hz.).
3. Connect a VTVM between terminal ㊽ on the main board and chassis ground.
4. Adjust the +11 ADJ. (R851) on the main board (See figure 13 for + volts reading. Remove a VTVM.

6-5. HEIGHT ADJUSTMENT

The HEIGHT control (R352) shown in figure 12 changes the size of the picture or pattern. Make final adjustment to overscan the mask about 10% vertically.

6-6. FOCUS ADJUSTMENT

Adjust the FOCUS control (Z411) shown in figure 12 for well defined scanning lines on the picture screen.

6-7. HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. The +11 volt power supply must be properly adjusted to insure the correct high voltage.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST controls to minimum (zero beam current).
3. High voltage will be measured below 13kv.
4. Rotate the BRIGHTNESS control to both extremes to be sure the high voltage does not exceed the limit under any conditions.

6-8. AGC DELAY ADJUSTMENT

1. Tune in the strongest station in your area.
2. Turn on AFC switch (SA02). (See figure 2.)
3. Turn the AGC DELAY control (R152) shown in figure 11 fully counterclockwise, then turn it clockwise until snow noise just disappears from the screen.

6-9. AFC (Automatic Frequency Control) FIELD ALIGNMENT

1. Place AFC Switch in OFF position. Tune the set to an active channel and adjust fine tuning for best picture.
2. Place AFC Switch in ON position, and adjust Trans. (L171) on Main Board for best picture. Picture quality should be the same as that obtained in Step 1.
3. Check the AFC PULL-IN action by turning the tuning Control clockwise and counterclockwise.

6-10. COLOUR SYNC. ADJUSTMENT

1. Tune in a colour programme and warm up for five minutes.
2. Connect terminal pin 17 of IC501 and the Main Board earth with the short jumper wire.
3. Connect the pin 21 of IC501 and the Main Board earth with 10k ohm resistor so that the colour killer turns off.
4. Then the colour stripes appear on the screen when the adjustment is incorrect. Adjust the colour sync. VR (R552) so that the colour bar pattern stands still or drift slowly across the picture screen.
5. Remove the 10k ohm resistor.

6-11. PAL MATRIX ADJUSTMENT

1. Tune in the colour programme including the colour bar signals. For example, the Philips pattern is available.
2. Set the colour Control VR to obtain the proper colour.
3. If the PAL MATRIX adjustment is incorrect, the Venetian Blind would appear in the colour bars area.
   This case needs the adjustment.
4. At the first, adjust DL PHASE ADJ. Coil T501 to minimize the Venetian Blind.
5. Next, connect the terminal Pin 17 of IC501 and the Main Board earth with capacitor (30 pfd – 50 pfd). If the Venetian Blind appears, adjust DL ADJ. VR (R551) to minimize the Blind.
6. Remove the capacitor, and if the Venetian Blind still remains, adjust DL PHASE ADJ. Coil T501 to minimize the Blind again.
7. Repeat the item 5 and 6 procedures, adjust the R551 and T501 until the Blind don't appear when the capacitor is connected.

6-12. SIF DET. COIL ADJUSTMENT
(This adjustment needs the oscilloscope)

1. Tune in a programme which has a pure tone. (For example 400 Hz or 1 kHz.)
2. Connect the probe of oscilloscope to pin #6 of IC601 on Main Board.
3. Adjust SIF DET. COIL L602 (See figure 20.) so that the detected signal amplitude (pure tone goes to maximum.

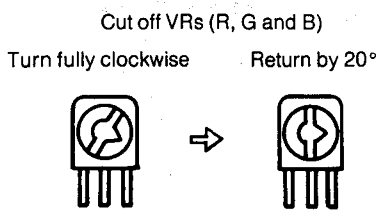
6-13. CRT GRAY SCALE ADJUSTMENT

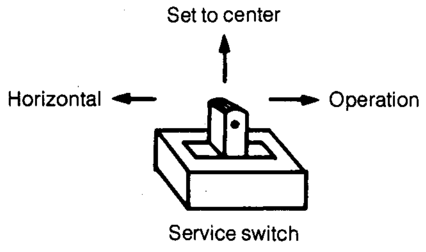
PREPARATION

- Connect the service color bar to the antenna jack and tune to the dot signal.
- Turn the screen VR fully counterclockwise.
- Set the service switch to "Horizontal".

*Turn the cut off VRs (R, G and B) fully clockwise, then return them 20°. (Refer to the remarks.)

1. Gradually turn the screen VR clockwise and minimize the cut off VR of the color which apperars first or second. Adjust the screen VR so that the color which appears third is just visible.
2. Adjust the cut off VRs minimized in item 1 so that all three colors are just visible and their levels identical.
3. Set the service switch to center. (Refer to the remarks.)
4. Turn the screen VR clockwise to obtain a white image.
5. Adjust the drive VRs (G and B) to obtain the correct white image.
6. After adjusting the white image, turn the screen VR fully counterclockwise.
7. Set the service switch to "Horizontal" and adjust so that the horizontal brightness increases.
8. Set the service switch to "Operation".





Service switch
(Viewed from unit bottom)

NOTE:
Turning the screen VR clockwise with the service switch set to "Horizontal" will below the CRT.
Adjust the screen VR while observing the screen.

6-14. SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST control BRIGHTNESS control to maximum position.
3. Set the COLOUR control to the centre.
4. Set the SUB-BRIGHT control (R257) to center and leave the receiver for five minutes in this state.
5. Watching the picture carefully, adjust the SUB-BRIGHT control in the position where the picture does not show evidence of blooming in high brightness area and not appear too dark in low bright area.
6. Check for proper picture variation by rotating the CONTRAST AND BRIGHTNESS controls to both extremes.
7. If the picture does not appear dark whith the CONTRAST and BRIGHTNESS controls turned to minimum. or not appear bright with the controls turned to maximum, adjust the SUBBRIGHT control again for an acceptable picture.

6-15. CONVERGENCE MAGNET ASSEMBLY POSITIONING

Convergence magnet assembly and rubber wedges need mechanical postioning following the figure 14.

6-16. COLOUR-PURITY-ADJUSTMENT

Note: Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes.

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS controls to maximum.
3. Adjust RED and BLUE CUT OFF controls (R556 and R559) to provide only a green raster. Advance the GREEN CUT OFF control (R558) if necessary.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (See figure 15) around the neck of the picture tube until the green belt is in the centre of the screen. At the same time, centre the raster vertically.
7. Move the yoke slowly forward until a uniform green screen is obtained. Tighten the clamp screw of the yoke temporarily.
8. Check the purity of the red and blue raster by adjusting the CUT OFF controls.
9. Obtain a white raster, referring to "CRT GRAY SCALE ADJUSTMENT".
10. Proceed with convergence adjustment.

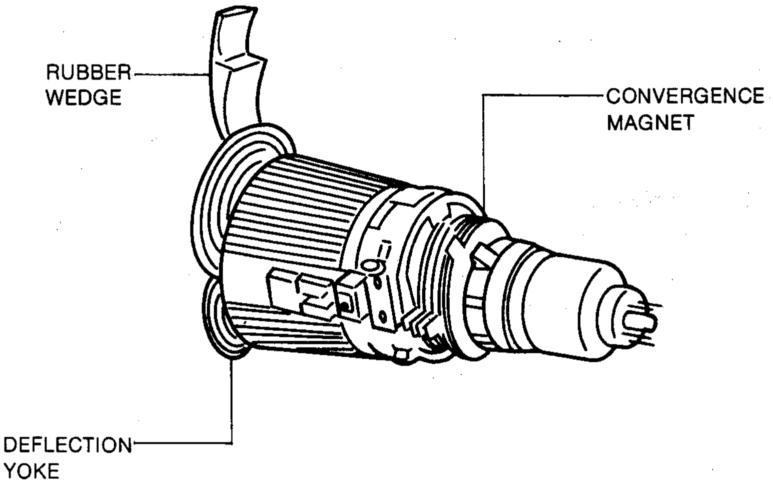


Figure 14.

6-17. CONVERGENCE ADJUSTMENTS

Note: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

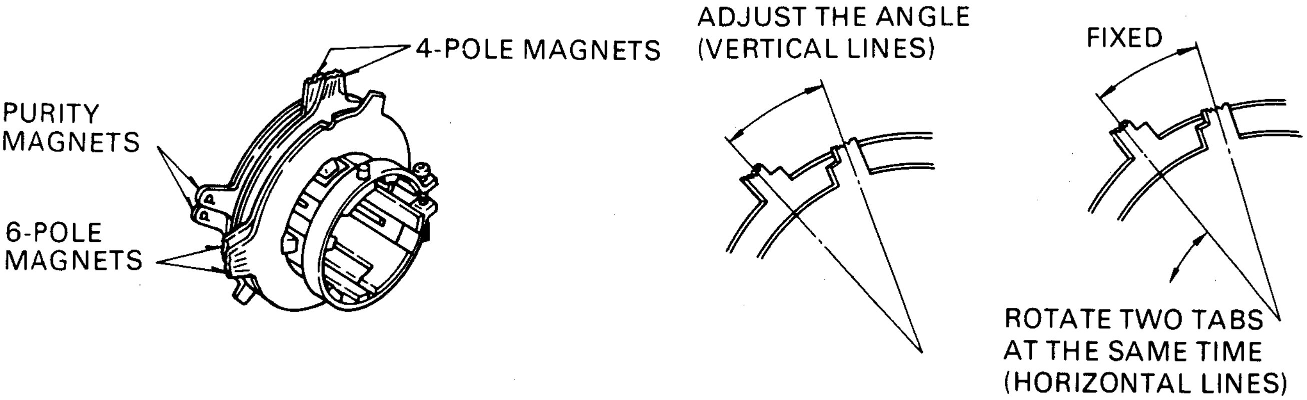
■ Center Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 15) and superimpose red and blue vertical lines in the centre area of the picture screen. (See figure 16.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure 16.)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5, keeping in mind red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets interact and make dot movement complex.

■ Circumference Convergence Adjustment

Note: This adjustment requires Rubber Wedge (23848772).

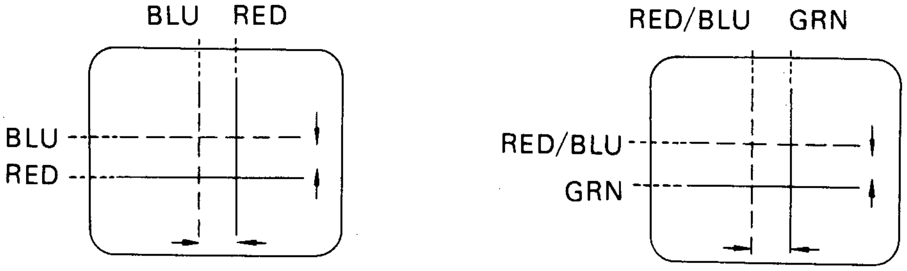
1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Place a wedge as shown in figure 14 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure 16) Push the mounted wedge into the space between picture tube and the yoke to hold the yoke temporarily.
4. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure 16.)
5. Hold the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to hold the yoke.
6. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
7. After placing two wedges, recheck overall convergence. Tighten the screw firmly to hold the yoke tightly in place.
8. Stick 2 adhesive tapes on wedges as shown in figure 14.


4-POLE MAGNETS
PURITY MAGNETS
6-POLE MAGNETS
ADJUST THE ANGLE (VERTICAL LINES)
FIXED
ROTATE TWO TABS AT THE SAME TIME (HORIZONTAL LINES)

CONVERGENCE MAGNET ASSEMBLY

ADJUSTMENT OF MAGNETS

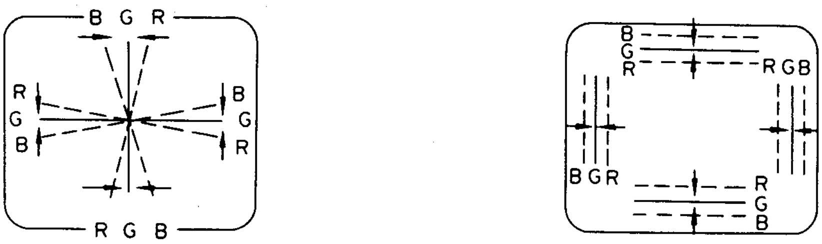
Figure 15



4-POLE MAGNETS MOVEMENT

6-POLE MAGNETS MOVEMENT

Centre Convergence by Convergence Magnets



INCLINE THE YOKE UP (OR DOWN)

INCLINE THE YOKE RIGHT (OR LEFT)

Circumference Convergence by DEF. Yoke

Figure 16. Dot Movement Pattern

7. GENERAL ALIGNMENT INSTRUCTIONS

7-1. GENERAL

Alignment is an exacting procedure and should be undertaken only when necessary.

The test equipment specified or its equivalent is required to properly perform the alignment procedures which are outlined on the following pages. Use of equipment which does not meet these requirements may result in the inability to properly align the receiver.

It is essential that bias values as specified are maintained during alignment to insure proper results.

7-2. EQUIPMENT TERMINATIONS

Alignment pads are designed for correct matching of the equipment to the circuits involved. Failure to use proper matching will result in responses which cannot be depended upon as representing the true operation of the receiver. The pads should be constructed as compactly as possible with all unshielded leads not in excess of 2.5 cm long.

7-3. SIGNAL OVERLOAD

Use of excessive signal from the sweep generator can cause overloading of receiver cicuits. To determine that this condition is not present and that the response curve is true, turn the sweep generator output to zero and then gradually increase the output until a response is obtained. Further increase of the sweep output should not change the configuration of the response except in amplitude. If the response changes in configuration, just as flattening at the top or dropping below the base line at the bottom, decrease the sweep output to restore the proper configuration.

The oscilloscope gain should be as high as possible to maintain a usable pattern with the peak-to-peak values specified, thus requiring a lower output from the sweep generator and less chance of overload.

Insertion of markers from the marker generator should not cause distortion of the response.

7-4. TEST EQUIPMENTS

OSCILLOSCOPE (WIDE BAND)
COLOUR-BAR/DOT/CROSSHATCH GENERATOR
TV SWEEP MARKER ALIGNMENT GENERATOR
VACUUM TUBE VOLTMETER
VOLT-OHM MILLIAMMETER
MARKER GENERATOR
POWER AND AGC BIAS SUPPLY
DIRECT LOW CAPACITY PROBE
SOUND SIGNAL GENERATOR
VIDEO SWEEP GENERATOR
MATCHING PAD (See figure 17)
DEGAUSSING COIL—Demagnetized picture tube and chassis.
MICROSCOPE—Microscope of approximately 12 power for phosphor dot observation in the colour picture tube.

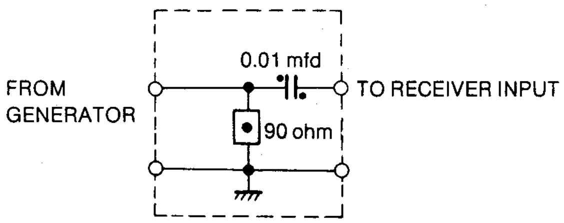


Figure 17. Matching Pad

8. PICTURE I-F SWEEP ALIGNMENT

GENERAL	Refer to figures 18 and 20 for test equipment connection and alignment points.
PRELIMINARY STEPS	1. Supply +11 volts to a on the Main Board. 2. Supply +8 volts bias to terminal "TP-14" on Main Board. 3. Turn AGC DELAY Control (R152) on the Main Board fully clockwise.
SWEEP/MARKER GENERATOR	Connect to the input on the Main Board. (Cut off service pattern —◂▸—Ⓐ see figure 20). Tune to 25–45 MHz sweep.
OSCILLOSCOPE	Connect with direct probe to terminal "TP-12" on the Main Board through 100k ohm resistor.

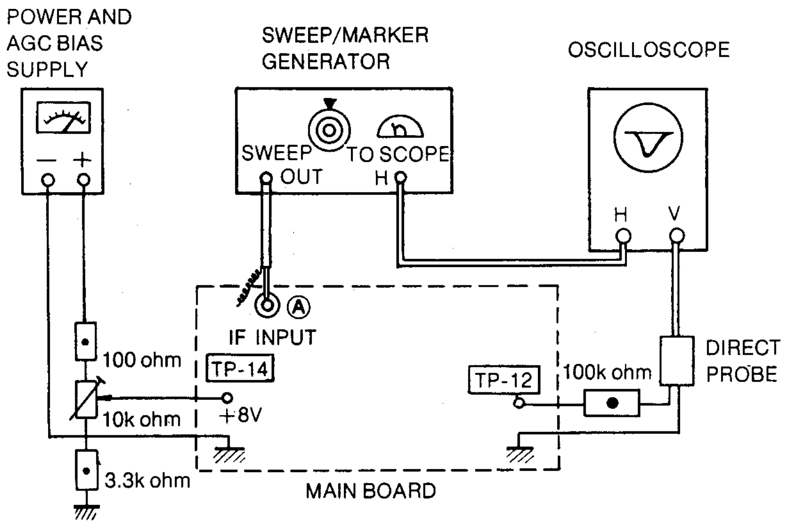

POWER AND AGC BIAS SUPPLY
SWEEP/MARKER GENERATOR
OSCILLOSCOPE
− +
SWEEP OUT
TO SCOPE H
H
V
Ⓐ
IF INPUT
TP-14
+8V
100 ohm
10k ohm
3.3k ohm
TP-12
100k ohm
DIRECT PROBE
MAIN BOARD

Figure 18. Picture I-F Sweep Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
L103 ALIGNMENT Set Oscilloscope gain for 0.1v/cm. Adjust sweep output for easy alignment. (See figure 19.)			
Detector Coil	38.9 MHz Marker "ON"	L103	Adjust L103 for maximum gain at 38.9 MHz on SCOPE. (See figure 19)

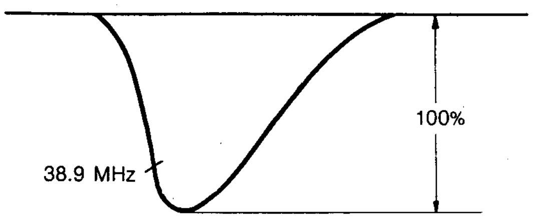
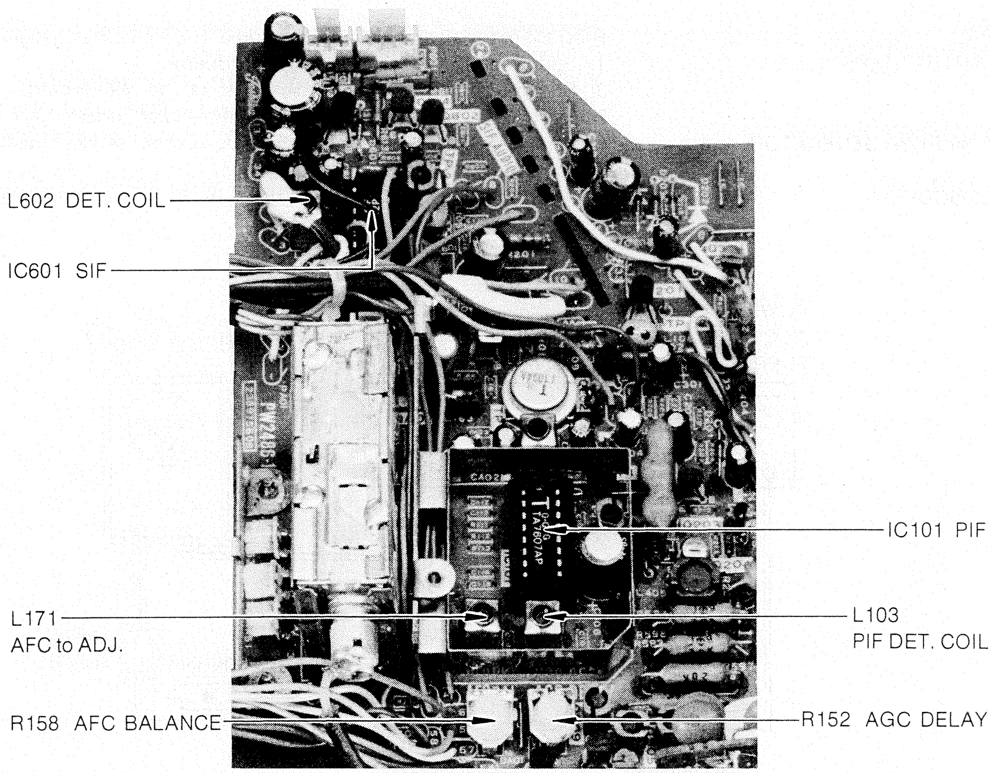


Figure 19. Magnified Response Curve

TOP VIEW


L602 DET. COIL
IC601 SIF
IC101 PIF
L171
AFC to ADJ.
L103
PIF DET. COIL
R158 AFC BALANCE
R152 AGC DELAY

BOTTOM VIEW (FOIL SIDE)

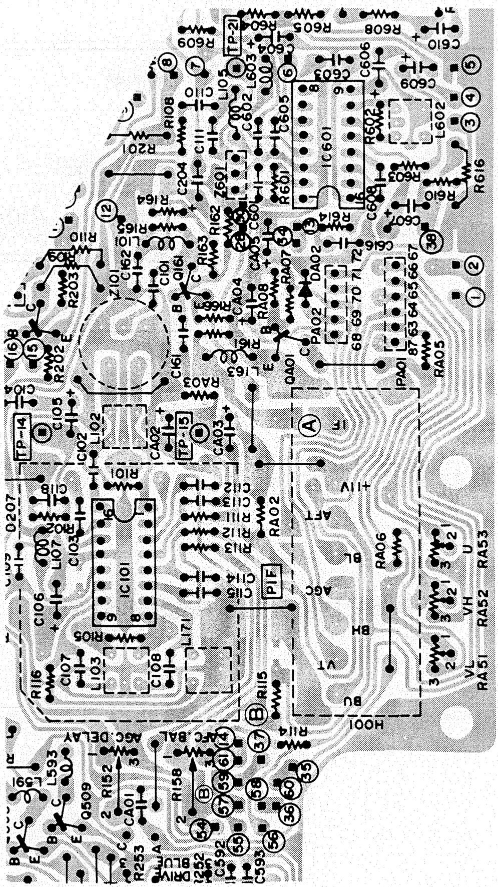

IC601
L602
IC101
L171
L103
R152
R158
AGC DELAY
AFC BAL.
TP-14
TP-15
TP-21
PIF
RA51
RA52
RA53

Figure 20. Picture I-F, AFC, and the Other Alignment Point

9. AFC ALIGNMENT

GENERAL	Refer to figures 20 and 21 for alignment points and test equipments connection.
PRELIMINARY STEPS	Follow the same steps as given under PICTURE 1-F SWEEP ALIGNMENT on page 19.
SWEEP/MARKER GENERATOR	Connect to the IF input on Main Board. Tune to 25−45 MHz sweep. (Cut off service pattern -◀▶- Ⓐ see figure 20)
OSCILLOSCOPE	Connect direct probe to terminal #10 (R158) on the Main Board.
VTVM	Connect direct probe to both side TERMINAL OF R158 (Cut off the solder of pattern -◀▶- Ⓑ see figure 20 coupling to main P.C. board #56 and #57).

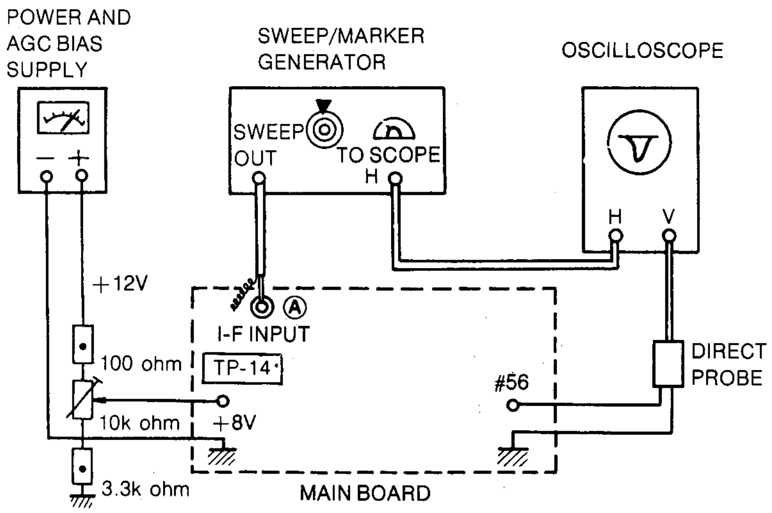

POWER AND AGC BIAS SUPPLY
− +
SWEEP/MARKER GENERATOR
SWEEP OUT
TO SCOPE
H
OSCILLOSCOPE
H
V
+12V
100 ohm
10k ohm
3.3k ohm
Ⓐ
I-F INPUT
TP-14
+8V
#56
MAIN BOARD
DIRECT PROBE

Figure 21. AFC Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
1. AFC Balance	NO SIGNAL	R152	Set the AFC switch to the ON position. Connect the ground side of VTVM to #1 of R158 and hot side to #3 OF R158 Adjust R158 (BALANCE ADJUST) for −1.0 volt reading on meter.
2. Primary f_0	38.9 MHz	L171	Remove the VTVM. Connect Direct Probe to Terminal #1 of R158 on Main Board. Adjust L171 for the response shown in figure 22.

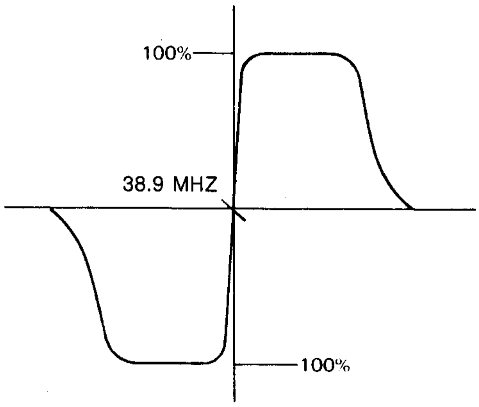


Figure 22. AFC Responses

10. COLOUR SYNC. AND PAL MATRIX ALIGNMENT

10-1. COLOUR SYNC.

Follow the same alignment as given under COLOUR SYNC; ADJUSTMENT on page 15.
Refer to figure 23 for alignment point.

10-2. PAL MATRIX

Follow the same alignment as given under PAL MATRIX ADJUSTMENT on page 15.
Refer to figure 23 of alignment points.

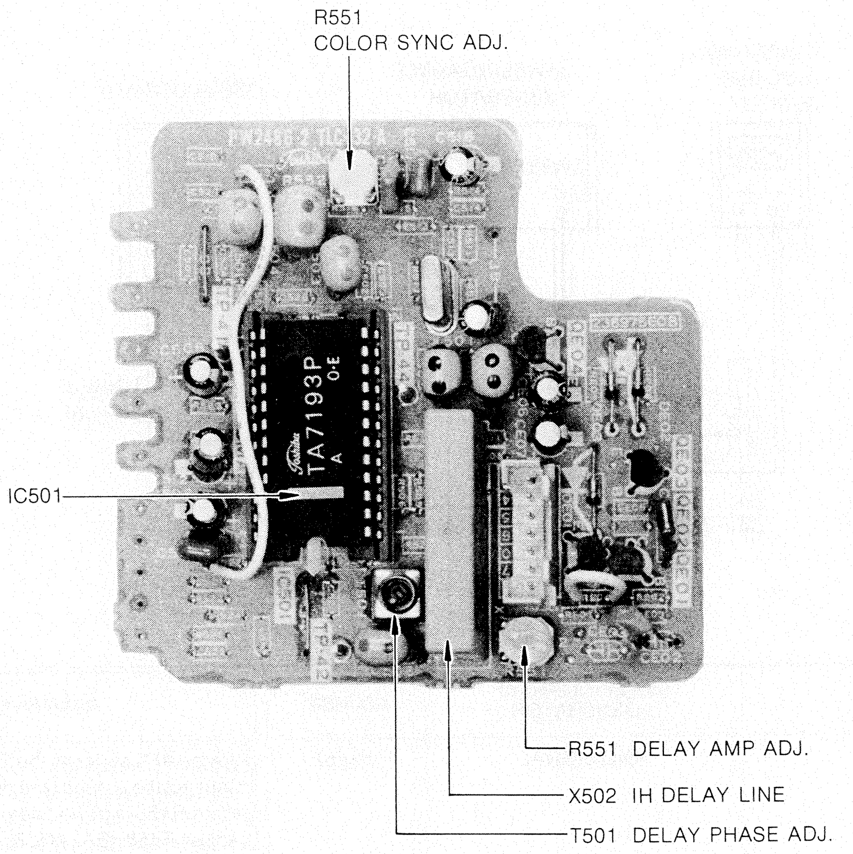
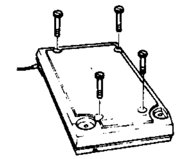

R551
COLOR SYNC ADJ.
IC501
TA7193P
R551 DELAY AMP ADJ.
X502 IH DELAY LINE
T501 DELAY PHASE ADJ.

Figure 23. Colour Sync. and PAL Matrix Alignment Points

11. BATTERY CASE INFORMATION MODEL BK-500

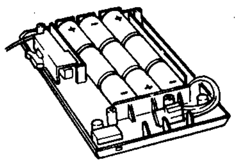
11-1. BATTERY INSTALLATION AND REPLACEMENT

Removing the Cover



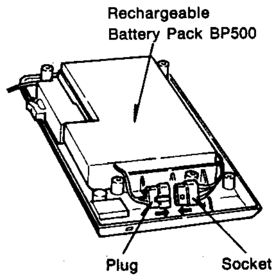
1. Remove the 4 screws on the back of the battery case and detach the rear cover.

When using Dry Cell Batteries:



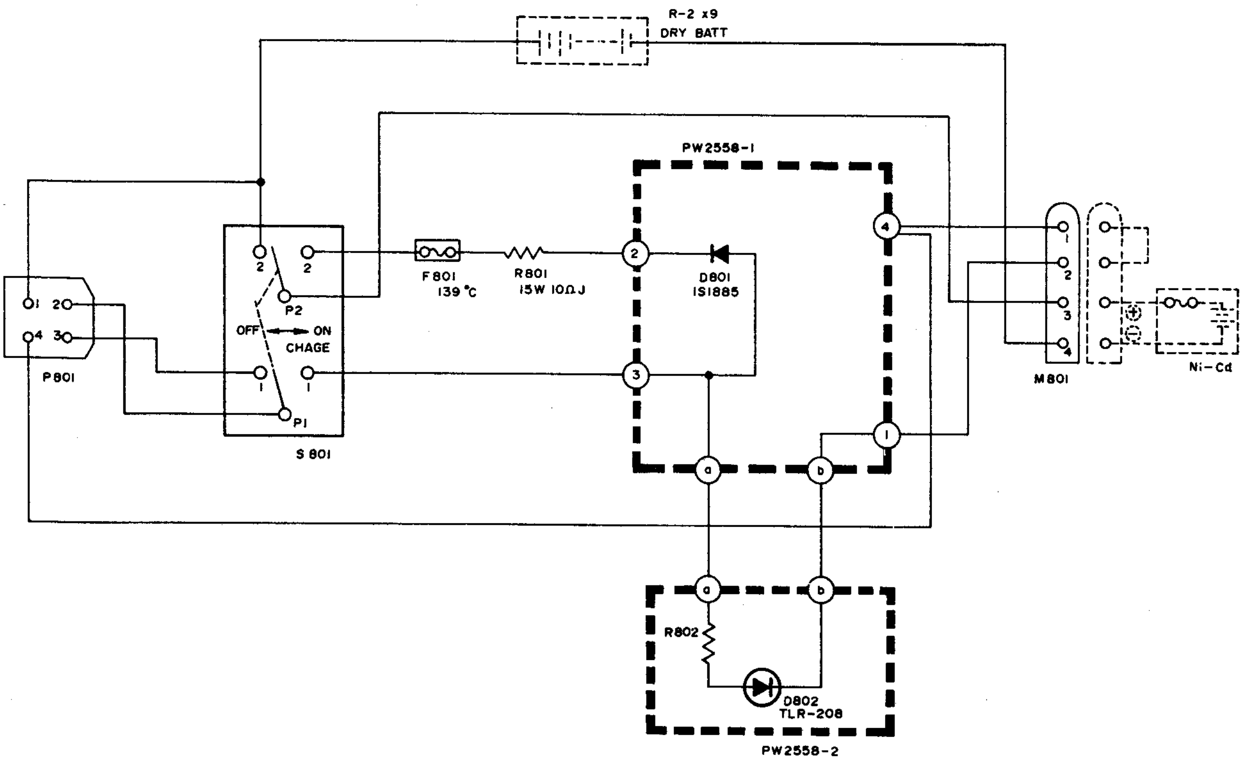
1. Insert the 9 dry cells as shown in the accompanying figure, being careful to observe the indicated polarities.
2. Replace the rear cover and screws; ensure that the screws are sufficiently tight.

When using the Battery Pack:



1. Remove the rear cover of the battery case as described above.
2. Position the BP-500 battery pack as shown in the sketch.
3. Insert the battery pack plug into the battery case jack.
4. Replace the rear cover.

BK500 SCHEMATIC DIAGRAM

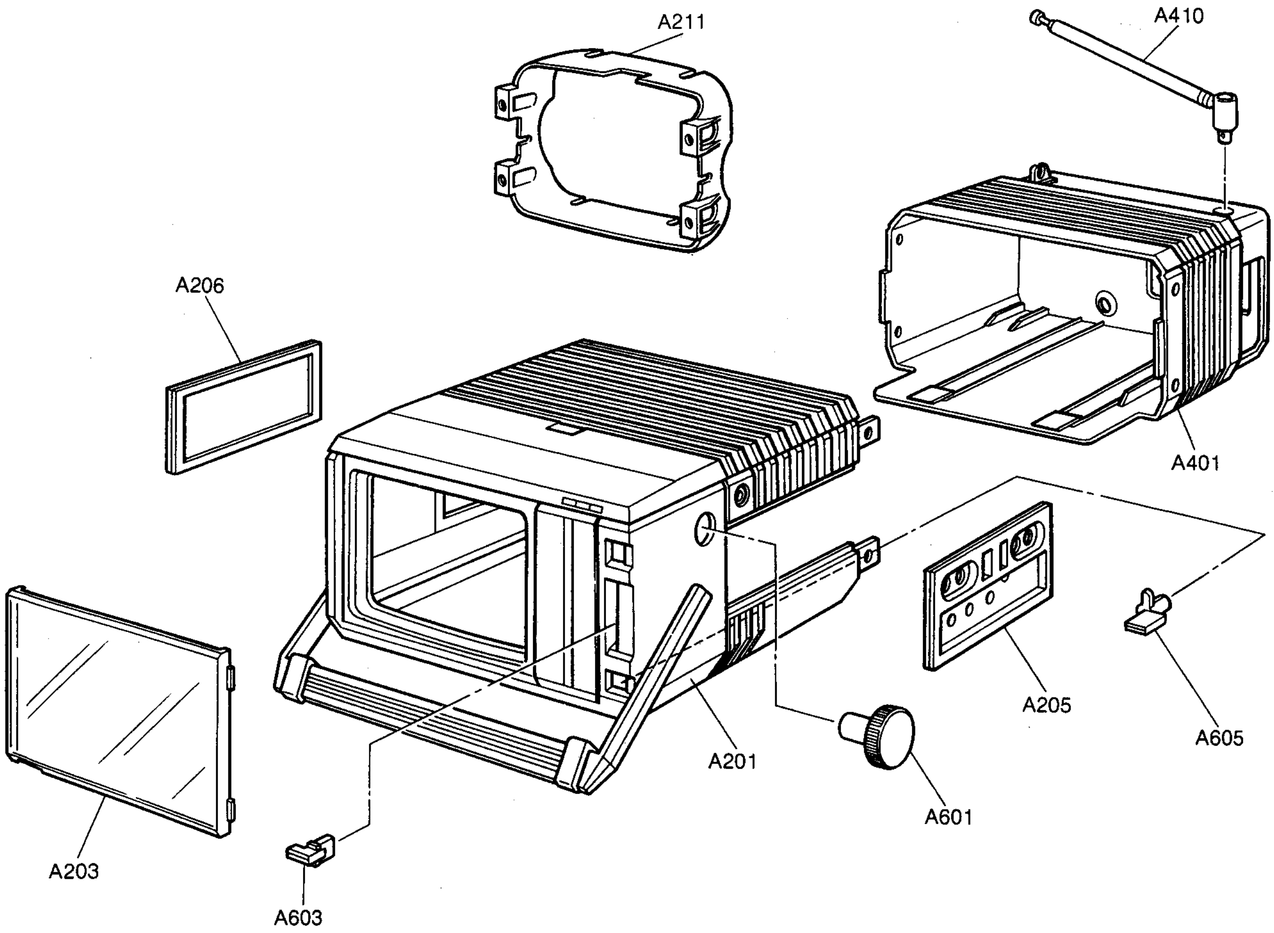

R-2 x9
DRY BATT
PW2558-1
F801
139°C
R801
15W 10ΩJ
D801
1S1885
P801
S801
OFF
ON
CHAGE
P1
P2
M801
Ni-Cd
R802
D802
TLR-208
PW2558-2

BATTERY CASE REPLACEMENT PARTS LIST

Schematic Location	Part No.	Description
	CHARGE UNIT	
U801	23139295	Charge Unit Assembly PW2558
RESISTOR		
R802	24381182	OMF, 1/2w, 1.8kΩ, ±5%
SEMICONDUCTORS		
D801	A7568521	Diode, 1S1885
D802	A8603140	LED, TLR208
MISCELLANEOUS		
U811	23897544	P.C. Board PW2558

Schematic Location	Part No.	Description
	COMPONENTS NOT MOUNTED ON PW BOARD	
RESISTOR		
R801	24047100	Cement, RES, 15w, 10Ω, ±5%
MISCELLANEOUS		
S801	23145778	SWITCH, 2C2A
F801	23144080	TEMP, Fuse, 15A
P801	23176991	4P, Connector
A201	23832632	Top Cover
A202	23942999	Case
A222	23030208	Screw
A223	23097400	SRS
A224	23030207	Screw
A401	23832631	Bottom Cover

12. CABINET EXPLODED VIEW AND REPLACEMENT PARTS LIST


A211
A410
A206
A401
A205
A605
A201
A601
A203
A603

KEY NO.	PART NO	DESCRIPTION
A203	23827864	SUN SHIELD
A201	23824031	FRONT COVER
A205	23886628	CONTROL PANEL
A401	23804847	BACK COVER
A410	23124985	ANTENNA ROD
A211	23848773	CRT HOLDER
A601	23874996	KNOB (TUNING)
A603	23874995	KNOB (VOLUME)
A605	23874994	KNOB (POWER)
A206	23846897	PANEL, CONTROL, LEFT

13. INSTALLATION OF CHIP PARTS

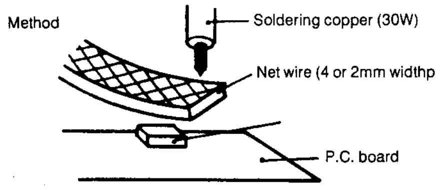
IN THIS MODEL A NUMBER OF CHIP PARTS ARE USED IN ADDITION TO DISCRETE PARTS. BELOW MENTIONAL INFORMATION ALLOWS YOU TO MAKE PROPER SERVICING WHEN CHIP PARTS DEFECT OCCURS.

1. Installaing spare part

Discrete parts are to be used as spare parts.

2. Servicing

(1) Discrete parts are to be used as spare parts.


Method
Soldering copper (30W)
Net wire (4 or 2mm widthp
P.C. board

Reason

- Removal time .... About 3 sec
- Peripheral parts and pattern will be unaffected.
- Skill is not required.

(2) How to install discrete parts

Generally, the parts should be installed in the reverse of the pattern.

- Make holes for the discrete parts.
- When installing the parts in the pattern side, use an insulating tube.

3. Chip parts identification

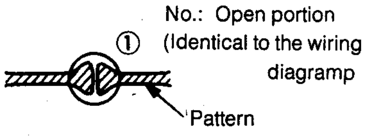
Separate the parts from the discrete parts.

(1) Identification on the P.C. board (Part)

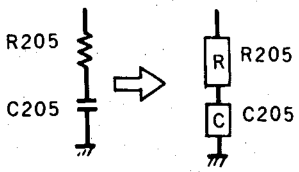
(Front surface)

4. Chip parts

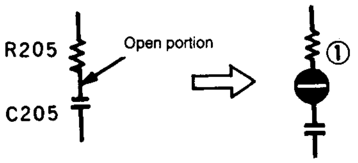
(2) Identification on P.C. board e attern portion)


No.: Open portion
① (Identical to the wiring diagramp
Pattern

(3) Identification on wiring diagram (Part)


R205
C205
R
R205
C
C205

(4) Identification on wiring diagram (Open pattern portion)


R205
Open portion
C205
①

14. CHASSIS PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

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AVVREVUATUIBS: Capacitors................ CD: Ceramic Disk, PF: Plastic Film, EL: Electrolytic
Resistors.................. CF: Carbon Film, CC: Carbon Composition, MF: Metal Film,
OMF: Oxide Metal Film, VR: Variable Resistor, FR: Fusible Resistor

POWER BOARD

Schematic Location	Part No.	Description			
U801	23139342	Power Board Assembly, PW2487			
CAPACITOR					
C803	24436101	CD	100pF	±5%	50v
C804	24636479	EL	4.7μF		50v
C805	24630995	EL	100μF		16v
C810	24086994	EL	4700μF		35v
C880	24095528	MP	0.1μF	±20%	AC250v
RESISTOR					
R801	24941302	CC	3kΩ	±5%	1/4w
R802,R804	24360512	CF	5.1kΩ	±5%	1/8w
R803	24360361	CF	360Ω	±5%	1/8w
R805	24360433	CF	43kΩ	±5%	1/8w
R809	24382821	OMF	820Ω	±5%	1w
R851	24061784	VR	5 kΩ	0.3w	+B ADJ.
R880	24946335	CC	3.3MΩ	±10%	1/2w
R881	24360272	CF	2.7 kΩ	±5%	1/8w
R882	24360511	CF	510Ω	±5%	1/8w
SEMICONDUCTORS					
Q802	A6534045	PNP, Transistor, 2SA1015Y Error AMP.			
Q803	A6317581	NPN, Transistor, 2SC1815 BL Volt Regu. Amp.			
Q804	A6317547	NPN, Transistor, 3SC1815Y Led Drive			
D805	A7285900	Zener Diode, 02Z 5,6A STD, Volt			
D806,D807	A7246711	Diode, 1S1555 (TV)			
MISCELLANEOUS					
⚠ F801	23144163	Fuse 315 MAT			
F801A,F803A	23165102	Fuse, Holder for P,C. Board			
⚠ F803	23144129	Fuse 2AT			

MAIN BOARD

Schematic Location	Part No.	Description			
U902-1	23139218	Main Board Assembly PW 2486-1			
CAPACITOR					
C101,C102 C109,C112 C113,C115 C161,C162 C601,C602 C605,C613 CA01	24232103	CD	0.01μF	+80% −20%	50v
C103,C114 C118	24232102	CD	0.001μF	+80% −20%	50v
C104,C105 C609	24636478	EL	0.47μF		50v
C106	24633331	EL	330μF		16v
C107,C108	24436020	CD	2pF	±0.25pF	50v
C110,C111	24436470	CD	47pF	±5%	50v
C201	24436151	CD	150pF	±5%	50v
C202,C203 CA03	24636229	EL	2.2μF		50v
C204,C311 C610,C612	24633101	EL	100μF		16v
C206,C301 C404	24636010	EL	1μF		50v
C207	24436181	CD	180pF	±5%	50v
C302	24212471	CD	470pF	±10%	50v
C303,C313	24538563	PF	0.056μF	±5%	50v
C304	24538184	PF	0.18μF	±5%	50v
C305	24538103	PF	0.01μF	±5%	50v
C306	24617995	EL	4.7μF		50v
C307	24633470	EL	47μF		16v
C308,C406 C409	24636339	EL	3.3μF		50v
309,C614	24630995	EL	1000μF		16v
C310,C312 C604	24633330	EL	33μF		16v
C320	24212331	CD	330pF	±10%	50v
C401	24602102	PF	1000pF	±10%	50v
C402	24602272	pF	2700pF	±10%	50v
C403,C410	24538183	PF	0.018μF	±5%	50v
C405	24538104	PF	0.1μF	±5%	50v
C407	24095449	PF	0.022μF	±5%	50v

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Schematic Location	Part No.	Description			
C408	24095450	PF	0.068μF	±5%	50v
C411	24828513	PF	0.051μF		200v
C412	24630996	EL	470μF		16v
C413	24642339	EL	3.3μF		160v
C414	24085998	EL	6.8μF	NP	25v
C415	24833473	PF	0.047μF		200v
C416	24095490	PF	1.5μF		250v
C418	24212332	CD	3300pF	±10%	50v
C419	24212391	CD	390pF	±10%	50v
C420	24214271	CD	270pF	±10%	500v
c421	24214391	CD	390pF	±10%	500v
C473	24633100	EL	10μF		16v
C591	24436561	CD	560	±5%	50v
C592,C593	24436821	CD	820	±5%	50v
C603,CA04	24538474	PF	0.47μF	±5%	50v
C606,C607	24633220	EL	22μF		16v
C608	24212103	CD	0.01μF	±10%	50v
C611	24212152	CD	1500pF	±10%	50v
C616	24538274	PF	0.27μF	±5%	50v
CA02,CA05	24636479	EL	4.7μF		50v
CAPACITOR					
CA02,CA05	24636479	EL	4.7μFF	50v	
RESISTOR					
R101,R309	24380821	CF	820Ω	±5%	1/8w
R102	24380824	CF	820kΩ	±5%	1/8w
R105,R405 R529,R530	24380392	CF	3.9kΩ	±5%	1/8w
R108,R112 R113,R162 R204,R213 R401,R413 R601	24380102	CF	1kΩ	±5%	1/8w
R109	24360152	CF	1.5kΩ	±5%	1/8w
R110	24360331	CF	330Ω	±5%	1/8w
R111,R164	24380221	CF	220Ω	±5%	1/8w
R114,R115 R308	24380563	CF	56kΩ	±5%	1/8w
R116	24380151	CF	150Ω	±5%	1/8w
R161,R415 R609	24380101	CF	100Ω	±5%	1/8w
R163,RA05	24380562P	CF	5.6kΩ	±5%	1/8w
R165	24380471	CF	470Ω	±5%	1/8w
R166	24380270	CF	27Ω	±5%	1/8w

Schematic Location	Part No.	Description			
R201	24360271	CF	270Ω	±5%	1/8w
R202	24360681	CF	680Ω	±5%	1/8w
R203	24380471	CF	470Ω	±5%	1/8w
R205	24380911	CF	910Ω	±5%	1/8w
R206,R409	24380683	CF	68kΩ	±5%	1/8w
R207,R310	24380273	CF	27kΩ	±5%	1/8w
R208	24380513	CF	51kΩ	±5%	1/8w
R209	24380820	CF	82Ω	±5%	1/8w
R210	24380222	CF	2.2kΩ	±5%	1/8w
R211,R222 R414	24380301	CF	300Ω	±5%	1/8w
R212	24380162	CF	1.6kΩ	±5%	1/8w
R214,R319 R320	24380751	CF	750Ω	±5%	1/8w
R215,R313	24000023	Thermisor D33A			
R216,R305 R324,R407	24380152	CF	1.5kΩ	±5%	1/8w
R217	24360822	CF	8.2kΩ	±5%	1/8w
R218	24380333	CF	33kΩ	±5%	1/8w
R219,R410 R606	24380271	CF	270Ω	±5%	1/8w
R220	24380162	CF	1.6kΩ	±5%	1/8w
R221	24380561	CF	560Ω	±5%	1/8w
R223	24945271	CC	270Ω	±5%	1/8w
R224	24360821	CF	820Ω	±5%	1/8w
R227	24360304	CF	300kΩ	±5%	1/8w
R228	24360224	CF	220kΩ		1/8w
R252,R253	24061786	VR	1kΩ		0.3w
		R252: G DRIVE			
		R253: B DRIVE			
R301	24360102	CF	1kΩ	±5%	1/8w
R302	24380274	CF	270kΩ	±5%	1/8w
R304	24380122	CF	1.2kΩ	±5%	1/8w
R305	24380203	CF	20kΩ	±5%	1/8w
R306	24380134	CF	130kΩ	±5%	1/8w
R307	24380623	CF	62kΩ	±5%	1/8w
R311	24982479	MF	4.7Ω	±5%	1/2w
R312	24380682	CF	6.8kΩ	±5%	1/8w
R314	24380103	CF	10kΩ	±5%	1/8w
R315	24380150	CF	15Ω	±5%	1/8w
R317	24380623	CF	62kΩ	±5%	1/8w
R318,R406 R604	24380272	CF	2.7kΩ	±5%	1/8w
R321	24982109	MF	1Ω	±5%	1/2w
R322	24982339	MF	3.3Ω	±5%	1/2w
R323	24380183	CF	18kΩ	±5%	1/8w

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Schematic Location	Part No.	Description
R325	24380512	CF 5.1kΩ ±5% 1/8w
R326,R603 R612	24380222	CF 2.2kΩ ±5% 1/8w
R327	24982129	OMF 1.2Ω ±5% 1/2w
R328	24380302	CF 3kΩ ±5% 1/8w
R351	24063970	VR 10kΩ 0.15w VERT. HOLD
R352	24061247	VR 22kΩ 0.15w HEIGHT
R402	24380121	CF 120Ω ±5% 1/8w
R403	24380123	CF 12kΩ ±5% 1/8w
R404,R602 R613	24380822	CF 8.2kΩ ±5% 1/8w
R408	24963103	OMF 10kΩ ±5% 1w
R412	24380470	CF 47Ω ±5% 1/8w
R416	24383820	OMF 82Ω ±5% 2w
R417	24380430	CF 43Ω ±5% 1/8w
R418	24531100	FR 10Ω ±5% 1/2w
R419	24941104	CC 100kΩ ±5% 1/4w
R478	24962621	OMF 620Ω ±5% 1/2w
R528	24360392	CF 3.9kΩ ±5% 1/8w
R556	24061713	VR 5kΩ 0.1w R556: R.CUT OFF R558: G.CUT OFF R559: B.CUT OFF
R592,R594 R596	24382203	OMF 20kΩ ±5% 1w
R597,R598 R599	24945472	CC 4.7kΩ ±10% 1/4w
R605,RA07 RA08	24380223	CF 22kΩ ±5% 1/8w
R607,R608	24380681	CF 680Ω ±5% 1/8w
R610	24380332	CF 3.3kΩ ±5% 1/8w
R611	24531180	FR 18Ω ±5% 1/2w
R614	24380182	CF 1.8kΩ ±5% 1/8w
R615	24982120	MF 12Ω ±5% 1/2w
R616	24360333	CF 33kΩ ±5% 1/8w
R661	24942470	CC 47Ω ±5% 1/2w
RA01	24382163	OMF 16kΩ ±5% 1w
RA02	24380913	CF 91kΩ ±5% 1/8w
RA03	24380164	CF 160kΩ ±5% 1/8w
RA06	24380153	CF 15kΩ ±5% 1/8w
RA51,RA52	24061709	VR 100kΩ 0.1w RA51: VL SUB TUNING RA52: VH SUB TUNING
RA53	24061710	VR 50kΩ 0.1w RA53: U SUB TUNING

Schematic Location	Part No.	Description

COILS AND TRANSFORMERS

SCHEMATIC LOCATION

L101	23261985	Coil TRF9221 RF Choke
L102	23262856	Coil TRF1452 PIF-Fixed-1
L103	23262853	Coil TRF1454 PIF Coil
L105	23283120	Coil, PL-12, Peaking
L106	23283150	Coil, PL-15, Peaking
L107	23261964	Coil, TRF9014F, Choke
L163	23262951	Coil TRF1019, Choke
L171	23262852	Coil TRF1455 AFT Coil
L401	23225699	Coil, TLN1023, Horiz, Hold
L403	23222685	Coil, TLN2041 Liniality
L404	23221076	Coil, TLN1015R, Choke
L405	23221026	Coil Choke, AZ9004Y
L406	23261979	Coil, HC4-035, Choke
L591,L592 L593	23261969	Coil, TRF9014A, Choke
L602	23252953	Coil, TRF6412, SIF
T401	23224990	Transformer, TLN1029, Horizontal Drive
⚠ T461	23226550	Transformer, TFB3058B, Flyback

SEMICONDUCTORS

SCHEMATIC LOCATION

IC101	B0354710	IC, TA7607AP, PIF AFC
IC601	B0356221	IC, TA7632P FA-1 SIF
Q161	A6708871	NPN TR, 2SC388 PIF Pre Amp.
Q201,Q202 Q204	A6534045 or A6534021	PNP Transistor 2SA1015-Y or O Q201: 1st VIDEO Q202: VIDEO Q204: 4th VIDEO
Q301,Q401 Q203	A6534045	PNP Trnsistor 2SA1015-Y Q301: SYNC SEP Q401: HOR OSC Q203: 3rd VIDEO
Q205,Q602 QA01	A6317547 or A6317526	NPN Transistor 2SC1815-Y or O QA01: BAND SW Q205: BLANKING Q602: AUDIO DRIVE
Q303,Q304	A6317547	NPN Transistor 2SC1815-Y Q303: VERT OSC Q304: VERT AMP

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Schematic Location	Part No.	Description
Q306	A6319560	NPN Transistor 2SC2073 FA-1 VERT OUT
Q307	A6534125	PNP Transistor, 2SA1020Y VERT OUT
Q402	A6319302	NPN Transistor 2SC1959-YFA HOR, Drive
Q404	A6325206	NPN Transistor, 2SC2233 FA-1 HOR Out
Q505,Q507 Q509	A6330000	NPN Transistor 2SC2482 VIDEO Out
Q603	A6321241	NPN Transistor 2SC2120 Audio Out
Q604	A6532941	PNP Transistor 2SA950 Audio Out
D201,D202 D203,D204 D205,D206 D302,D303 D304,D305 D401,D402 D601,DA02	A7246711	Diode, 1S1555 (TV) D201: ABL D202: HOR BLANKING D203: VERT BLANKING D204: BLANKING SW D205: BLANKING SW D206: BLANKING SYNC SW D302: VERT SYNC D303: VIAS, D304: VIAS D304: VIAS D305: VERT BLANKING D401: HOR AFC D402: HOR AFC D601: VIAS DA02: TEMP. GUARANTY
D207	23115949	Diode, 1S32, WPS
D403	A7978850	Diode, S52950 Boost Up
D404	A7289800	Diode 1S2756 DAMPER
DA01	23115922	Diode, UPC574J +33v Zener

MISCELLANEOUS

SCHEMATIC LOCATION

Schematic Location	Part No.	Description
F401	23144079	Fuse, Temp-Fuse T-126C
H001	23121846	Tuner, EG411, UHF/VHF
P601	23164784	Plug 4P
P602	23164783	Plug, 3P
P902	23164725	Plug 2P
PA01	23164786	Plug, 6P
PA02	23164785	Plug 5P
Q101A Q601A	23116947	IC Socket, 16P
S201	23145747	Slide Switch
X201	23250967	Coil TRF2041 Y Delay Line
Z101	23107959	PSF, F1034
Z102	23107972	Ceramic Filter,5.5mhz, Video Trap
Z601	23107947	Ceramic Filter, 5.5mhz Sound

CHROMA MUTE

U902-2	23139217	Chroma Board Assembly, PW2486-2

CAPACITOR

C501	24436180	CD	18pF	±5%	50v
C502	24436101	CD	100pF	±5%	50v
C503,C509 C510,C530 C532	24232103	CD	0.01μF	+80% −20%	50v
C504,C526	24212102	CD	1000pF	±10%	50v
C505,C512 CE06	24636010	EL	1μF		50v
C508	24538474	PF	0.47μF	±5%	50v
C511	24212103	CD	0.01μF	±10%	50v
C513	24353220	CD	22pF	±5%	50v
C514	24436300	CD	30pF	±5%	50v
C515	24353680	CD	68pF	±5%	50v
C516	24636479	EL	4.7μF		50v
C517,C518	24538223	PF	0.022μF		50v
C521,C522 C523	24436271	CD	270pF	±5%	50v
C524	24436620	CD	62pF	±5%	50v
C525	24212152	CD	1500pF	±10%	50v
C527	24436270	CD	27pF	±5%	
C531	24538104	PF	0.1μF	±5%	50v
CE02	24602102	PF	1000pF	±10%	50v

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Schematic Location	Part No.	Description			
CE05	24353241	CD	240pF	±5%	50v
CE07	24636229	EL	2.2μF		50v
CE08	24538273	PF	0.027μF	±5%	50v
CE09	24633330	EL	33μF		16v
RESISTOR					
R501	24380564	CF	560kΩ	±5%	1/8w
R502	24380102	CF	1kΩ	±5%	1/8w
R503	24380563	CF	56kΩ	±5%	1/8w
R504	24380333	CF	33kΩ	±5%	1/8w
R506,R509	24380821	CF	820Ω	±5%	1/8w
R507,RE07 RE08	24380104	CF	100kΩ	±5%	1/8w
R508	24380223	CF	22kΩ	±5%	1/8w
R510	24380511	CF	5.1kΩ	±5%	1/8w
R511	24380471	CF	470Ω	±5%	1/8w
R512	24380822	CF	8.2kΩ	±5%	1/8w
R513	24380823	CF	82kΩ	±5%	1/8w
R514	24380122	CF	1.2kΩ	±5%	1/8w
R515,R516	24380273	CF	27kΩ	±5%	1/8w
R517	24380561	CF	560Ω	±5%	1/8w
R518,R523 R525,R527	24380391	CF	390Ω	±5%	1/8w
R519	24380682	CF	6.8kΩ	±5%	1/8w
R520	24380331	CF	330Ω	±5%	1/8w
R522,R524 R526	24380272	CF	2.7kΩ	±5%	1/8w
R551	24061729	VR	500Ω	0.1w	DL ADJ.
R552	24061726	VR	5kΩ		0.1w
		COLOR SYNC			
RE01	24380182	CF	1.8kΩ	±5%	1/8w
RE02	24380394	CF	390kΩ	±5%	1/8w
RE09	24380223	CF	22kΩ	±5%	1/8w
RE10	24360151	CF	150Ω	±5%	1/8w
COILS AND TRANSFORMER					
L501,L503	23283220	Coil, PL-22, peaking			
L502	23283102	Coil, PL-1000, peaking			
L504	23283682	Coil, PL-6800, peaking			
L505	23283101	Coil, PL-100, peaking			
L506	23283829	Coil, PL-8.2, peaking			
LE01	23283152	Coil, TRF PL-1500, peaking			
T501	23270998	Transformer, TRF 5420 Delay Phase Adj			

Schematic Location	Part No.	Description
SEMICONDUCTOR		
IC501	B0318931	IC, TA7193P, CHROMA PAL
QE01,QE03	A6317567	NPN, Transistor QE01: NOISE AMP QE03: NOISE DET
QE02	A6317547	NPN, Transistor, 2SC1815-Y Mute Switch
QE04	A6534045	PNP, Transistor, 2SA1015-Y Sound Mute
DE01,DE02 DE03	A7246711	Diode, 1S1555 (TV) DE01: PROTECTOR DE02: PROTECTOR DE03: SWITCH
MISCELLANEOUS		
Q501A	23116918	IC, Socket, 24P
X501	23153979	Xtal, 4.43MHz
X502	23250966	1H Delay Line

MONITOR BOARD

U902-3	23139216	Monitor Board Assembly, W2486-3			
CAPASITOR					
CH01	24631221	EL	220μF		6.3v
CH02	24633100	EL	10μF		16v
CH03	24636339	EL	3.3μF		50v
CH04	24232103	CD	0.01μF	+80% −20%	50v
CH05	24632331	EL	330μF		10v
CH06	24633220	EL	22μF		16v
RESISTOR					
R254	24063962	VR	500Ω		0.15w
		CONTRAST			
R255	24063961	VR	1kΩ		0.15w
		BRIGHT			
R257	24061725	VR	10kΩ		0.1w
		SUB BRIGHT			
R260,RH02	24380911	CF	910Ω	±5%	1/8w
R261	24380562	CF	5.6kΩ	±5%	1/8w
R541	24380272	CF	2.7kΩ	±5%	1/8w
R555	24063958	VR	10kΩ		0.15w
		COLOR			
RH01	24380820	CF	82Ω	±5%	1/8w
RH03,RH10	24380182	CF	1.8kΩ	±5%	1/8w

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Schematic Location	Part No.	Description			
RH04	24380912	CF	9.1kΩ	±5%	1/8w
RH05	24380222	CF	2.2kΩ	±5%	1/8w
RH06	24380512	CF	5.1kΩ	±5%	1/8w
RH07,RH11	24360332	CF	3.3kΩ	±5%	1/8w
RH08	24380563	CF	56kΩ	±5%	1/8w
RH09	24380910	CF	91Ω	±5%	1/8w
SEMICONDUCTOR					
QH01,QH02	A6317547 or A6317526	NPN, Transistor, 2SC1815 Y or O QH01: EX. VIDEO AMP QH02: EX. DRIVE			
DH01	A7246711	Diode, 1S1555 (TV)Clamp			
MISCELLANEOUS					
PH01,PH02 PH03,PH04	23163381	hone Jack, VIDEO IN, OUT AUDIO, IN, OUT			
SA02,SH01	23145702	Slide Switch SA02: AFC Sw SH01: TV MONITOR Sw			

CRT SOCKET

U902-4	23139215	CRT Socket Board Assembly, PW2486-4			
CAPASITOR					
C902	24210102	CD	1000pF	±20%	1kv
RESISTOR					
R920	24000895	FR	0.82Ω	±10%	1w
MISCELLANEOUS					
V901A	23116560	CRT Socket			
Z901,Z902 Z903,Z904	23140607	Spark Gap			
Z905	23199766	Spark Gap, SG9983JL			

INDICATOR BOARD

U902-5	2313924	Indicator Board Assembly PW2486-5			
CAPASITOR					
CB01	24212561	CD	560pF	±10%	50v
CB02	24602472	PF	0.0047μF	±10%	50v
CB03	24636478	EL	0.47μF		50v
CB04	24538154	PF	0.15μF	±5%	50v

Schematic Location	Part No.	Description			
CB05	24085031	EL	1μF	NP	25v
CB06 CB07	24636229	EL	2.2μF		50v
RESISTOR					
RB01	24360164	CF	160kΩ	±5%	1/8w
RB02	24380821	CF	820Ω	±5%	1/8w
RB03	24380362	CF	3.6kΩ	±5%	1/8w
RB04,RB08	24380103	CF	10kΩ	±5%	1/8w
RB05,RB10 RB11	24380473	CF	47kΩ	±5%	1/8w
RB06,RB23	24380102	CF	1kΩ	±5%	1/8w
RB07,RB13 RB15,RB16 RB17,RB18 RB19,RB24	24380223	CF	22kΩ	±5%	1/8w
RB09	24880914	CF	91kΩ	±5%	1/8w
RB12,RB14	24380104	CF	100kΩ	±5%	1/8w
RB20	24380821	CF	820Ω	±5%	1/8w
RB21	24380112	CF	1.1kΩ	±5%	1/8w
RB22	24380472	CF	4.7kΩ	±5%	1/8w
SEMICONDUCTOR					
ICB01	B0470116	IC, TC4011BP INPUT-NAND			
ICB02	B0470016	IC, TC4001BP, 2-INPUT-NOR			
QB05,QB07 QB08	A6534045 or A6534021	PNP, Transistor 2SA1015-Y or O QB05: PULSE AMP QB07: AFC AMP QB08: AFC AMP			
QB06,QB09	A6317567	NPN, Transistor 2SC1815-GR QB06,QB09: AFC AMP			
QB03,QB04 QB10,QB11	A6317547 or A6317526	NPN, Transistor 2SC1815-Y or O QB03: PULSE AMP QB04: PULSE AMP QB10: LED DRIVE QB11: LED DRIVE			
DB01,DB02 DB04,DB05	A7246711	Diode, 1S1555 (TV) DB01: SWITCH DB02: SWITCH DB04: PROTECTOR DB05: PROTECTOR			

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The shaded areas in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

Schematic Location	Part No.	Description
MISCELLANEOUS		
PB01	23164783	Plug, 3P
QB01A QB02A	23116948	IC, Socket, 14P

COMPONENTS NOT MOUNTED ON P.W.BOARDS

Schematic Location	Part No.	Description
CAPACITORS		
C811,C812 C813,C814	24232103	CD 0.01μF 50v
RESISTORS		
R651	24060559	VR 10kΩ Slide 1/10w Sound
R806	24007944	Cement Resistor, 10w, 12Ω, ±5%
COIL AND TRANSFORMERS		
⚠ L462	23227883	Deflection Yoke, TDY3050B
L902	23200883	Coil, Degausing, TSB2135
⚠ T801	23213927	Transformer, TPW1185, Power
SEMICONDUCTORS		
Q801	A6842185	NPN Transistor 2SD553Y POWER REG.
D801	A7671002	Diode, 4B4B41 POWER RECT
MISCELLEANEOUS		
B211	23832648	Cover, Rear
E912	23848772	Wedge, Rubber for CRT
P001	23142748	Terminal Board, Antenna, AT-901H
P661	23163061	Earphone Jack
⚠ P801	23176311	Power Cord
⚠ P802	23164861	Plug 2P
P831	23164639	Plug Assy, Cigar
⚠ S801	23145704	Switch, Push POWER
⚠ S802	23145697	Switch, MAINS
S803	23145703	Switch, Push DEGAUSSING
⚠ V901	A51461HA	Picture Tube, 140DCB22Y, COLOUR
W661	23151662	Speaker, Round-Cone, SPK1077
⚠ Z411	23115688	Focus Pack, TPA6015

MODULE UNITS AND CIRCUIT BOARD ASSEMBLIES

Schematic Location	Part No.	Description
CIRCUIT BOARD ASSEMBLIES		
U801	[illegible]	P.C. Board Assy, PW2457, Powe
U802	[illegible]	P.C. Board Assy, PW2480, Main

DIAL BLOCK PARTS

Schematic Location	Part No.	Description
RA54	24060542	VR, 100kΩ, 0.1w, Tuning
SA01	23145701	Switch, Slide Band Switch

CABINET EXPLODED PARTS

Schematic Location	Part No.	Description
A211	23848773	Dial Assembly
A701	23925417	Carton Box Sotobako 5Y015G
Y101	23991929	Qwner's Manual
Y105	23152996	Earphone
Y141	23124050	UHF Antenna
Y142	23293995	Antenna Matching Trans

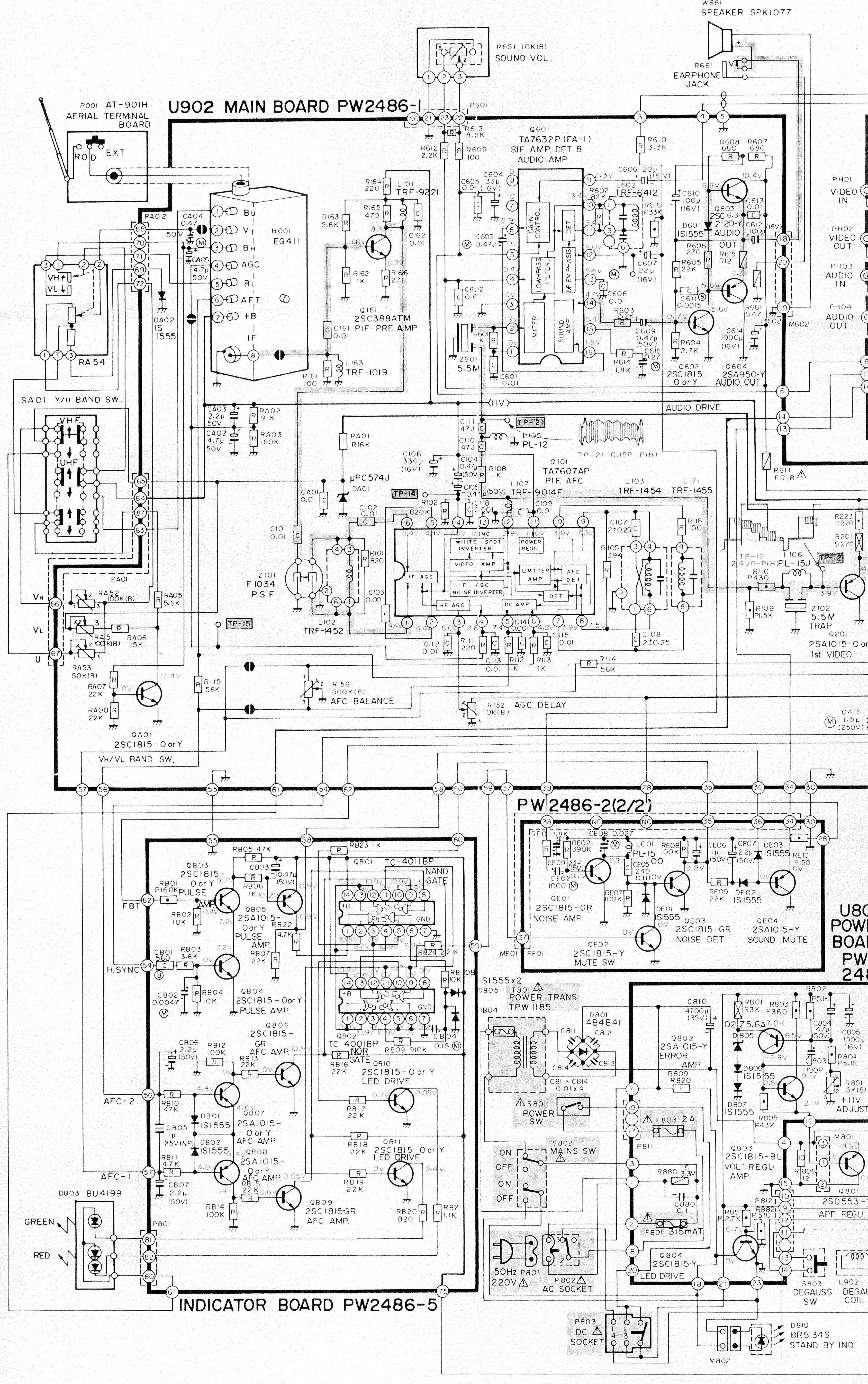
16. SCHEMATIC DIAGRAM <MODEL C-500>

NOTE: The parts identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chassis ground, line voltage 220 volts, colour bar signal.
2. Voltages reading may vary ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, AGC, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.
7. Voltages in the brackets < > are measured under the DC operation.

NOTE



U902 MAIN BOARD PW2486-1
P001 AT-901H AERIAL TERMINAL BOARD
ROD
EXT
H001 EG411
R651 10K(B) SOUND VOL.
W661 SPEAKER SPK1077
R661 EARPHONE JACK
Q601 TA7632P (FA-1) SIF AMP, DET. & AUDIO AMP
GAIN CONTROL
DET
LOWPASS FILTER
DE EMPHASIS
LIMITER
SOUND AMP
Z601 5.5M
Q161 2SC388ATM PIF-PRE AMP
L101 TRF-9221
L163 TRF-1019
Q602 2SC1815-O or Y
Q603 2SC1815-Y AUDIO OUT
Q604 2SA950-Y AUDIO OUT
AUDIO DRIVE
M602
PH01 VIDEO IN
PH02 VIDEO OUT
PH03 AUDIO IN
PH04 AUDIO OUT
SA01 V/U BAND SW.
VHF
UHF
RA54
DA02 IS1555
Q101 TA7607AP PIF, AFC
μPC574J DA01
TP-21 0.15P-P(H)
L105 PL-12
L107 TRF-9014F
L103 TRF-1454
L171 TRF-1455
WHITE SPOT INVERTER
POWER REGU
VIDEO AMP
LIMITER AMP
AFC DET
IF AGC
IF AGC NOISE INVERTER
RF AGC
DC AMP
DET
Z101 F1034 P.S.F
L102 TRF-1452
TP-14
TP-15
PA01
RA52 100K(B)
RA51 100K(B)
RA53 50K(B)
QA01 2SC1815-O or Y
VH/VL BAND SW.
R158 500K(B) AFC BALANCE
R152 10K(B) AGC DELAY
R611 FR18 ⚠
TP-12 2.4VP-P(H)
L106 PL-15J
Z102 5.5M TRAP
Q201 2SA1015-O or Y 1st VIDEO
PW2486-2(2/2)
QE01 2SC1815-GR NOISE AMP
QE02 2SC1815-Y MUTE SW
QE03 2SC1815-GR NOISE DET
QE04 2SA1015-Y SOUND MUTE
LE01 PL-15
ME01
INDICATOR BOARD PW2486-5
Q801 TC-4011BP NAND GATE
Q802 TC-4001BP NOR GATE
Q803 2SC1815-O or Y PULSE AMP
Q804 2SC1815-O or Y PULSE AMP
Q805 2SA1015-O or Y PULSE AMP
Q806 2SC1815-GR AFC AMP
Q807 2SA1015-O or Y AFC AMP
Q808 2SA1015-O or Y AFC AMP
Q809 2SC1815GR AFC AMP
Q810 2SC1815-O or Y LED DRIVE
Q811 2SC1815-O or Y LED DRIVE
FBT
H.SYNC
AFC-2
AFC-1
D803 BU4199
GREEN
RED
IS1555x2
T801 ⚠ POWER TRANS TPW1185
D801 4B4B41
S801 ⚠ POWER SW
S802 MAINS SW
ON OFF ON OFF
F803 2A ⚠
F801 315mAT ⚠
P811
50Hz P801 220V ⚠
P802 ⚠ AC SOCKET
P803 DC ⚠ SOCKET
Q802 2SA1015-Y ERROR AMP
Q803 2SC1815-BL VOLT REGU. AMP
Q804 2SC1815-Y LED DRIVE
Q801 2SD553
APF REGU
+11V ADJUST
S803 DEGAUSS SW
L902 DEGAU COIL
D810 BR5134S STAND BY IND
M802
U80 POW BOA PW 248

OF VOLTAGES AND WAVEFORMS

with VTVM from point shown to chassis
ltage 220 volts, colour bar signal.
g may vary ±20%.
shown is representative only.
are taken using a wide band oscilloscope and
probe.
UNING, AGC, BRIGHTNESS, CONTRAST
controls for best picture, make sure that
d COLOUR controls are in mid position and
control is almost in maximum position.
taken using a standard colour bar signal.
brackets < > are measured under the DC

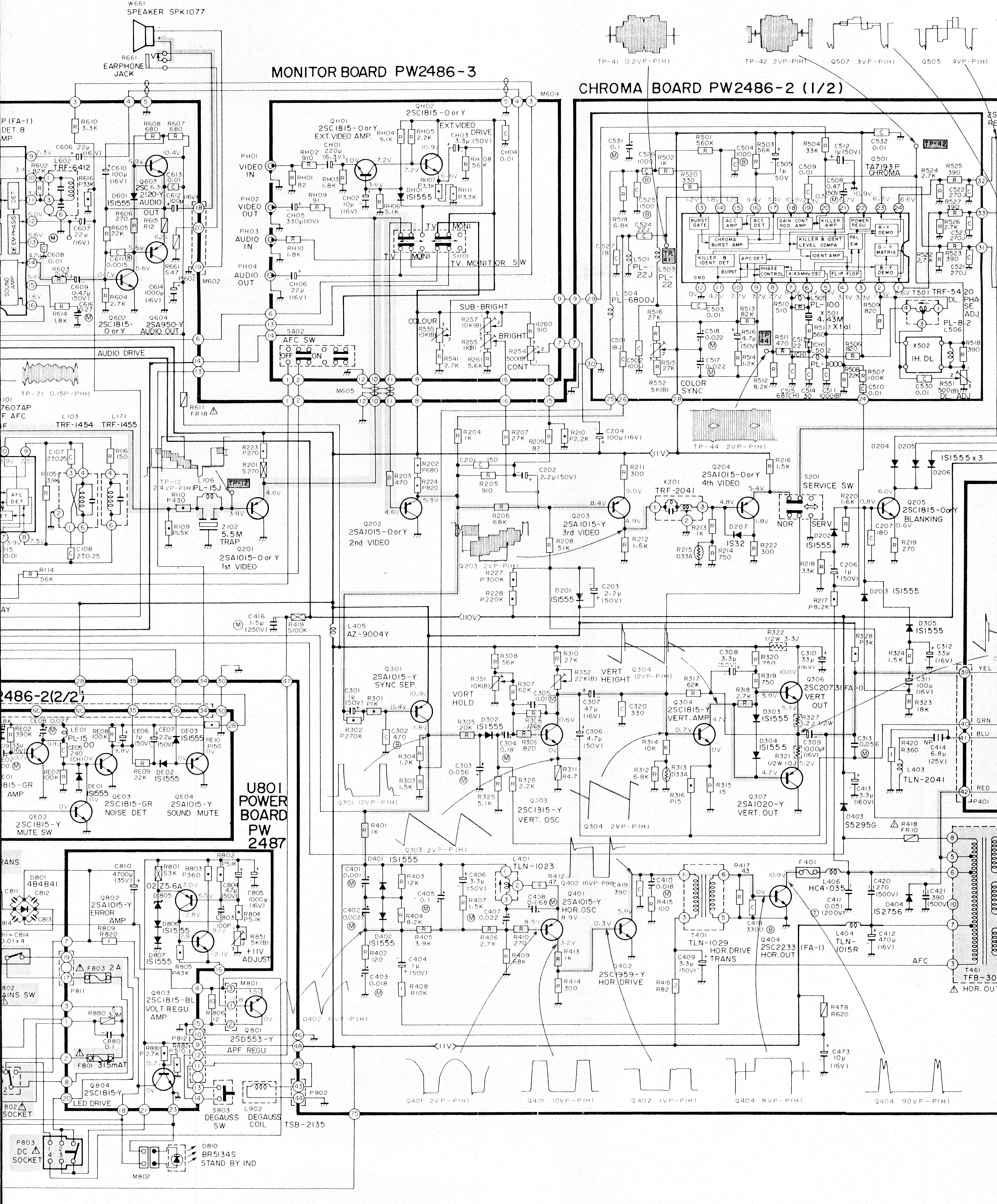
NOTES:

1. D.C. resistance values of principal transformers are shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. Open pattern portion (—◆—).

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

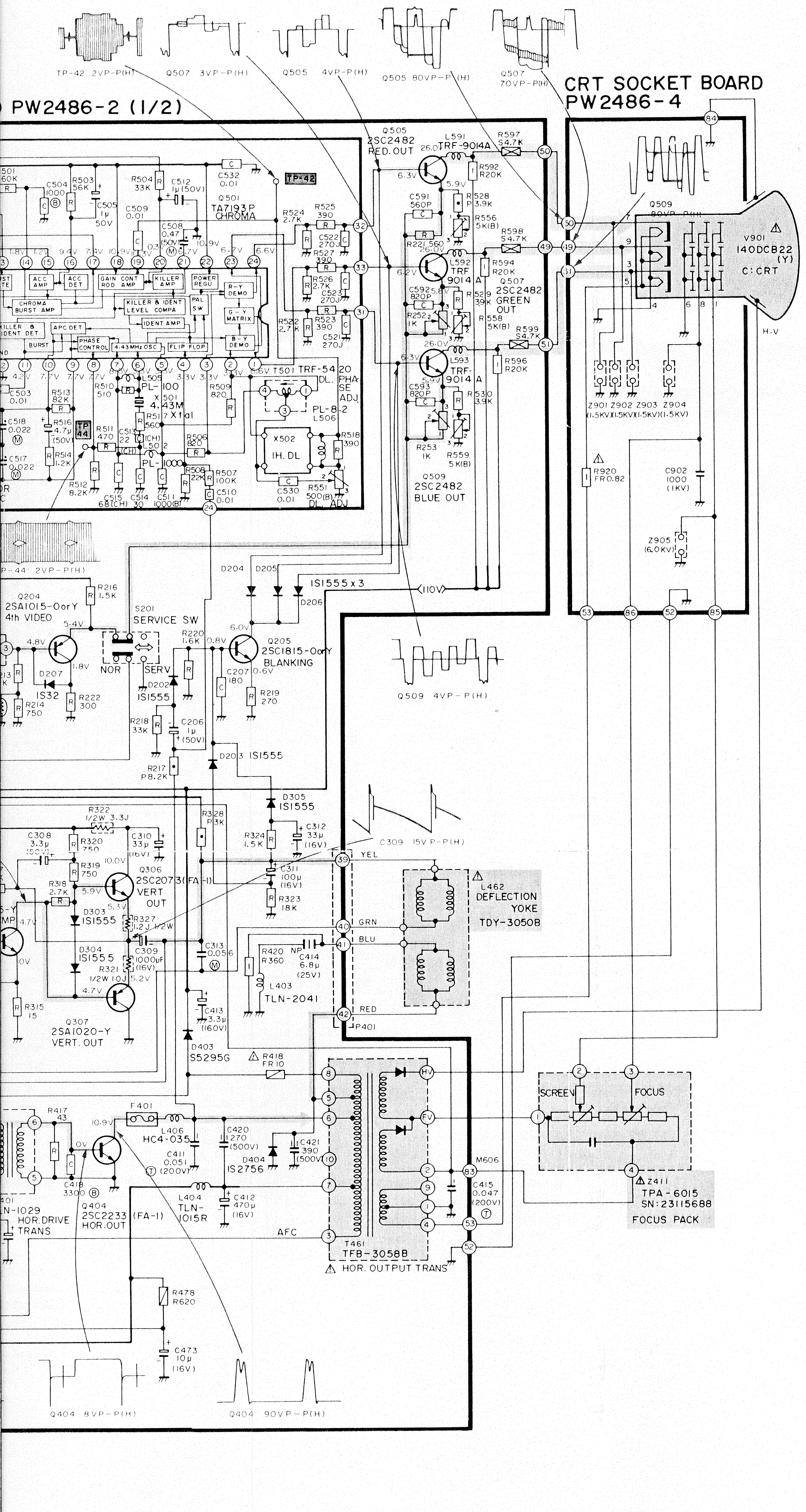
1. Resistance is shown in ohm, k = 1,000, M = 1,000,000.
2. Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.



W661
SPEAKER SPK1077
R661
EARPHONE JACK
MONITOR BOARD PW2486-3
CHROMA BOARD PW2486-2 (1/2)
TP-41 0.2VP-P(H)
TP-42 2VP-P(H)
Q507 3VP-P(H)
Q505 4VP-P(H)
M604
M602
M605
QH01 2SC1815-O or Y EXT.VIDEO AMP.
QH02 2SC1815-O or Y EXT.VIDEO DRIVE
PH01 VIDEO IN
PH02 VIDEO OUT
PH03 AUDIO IN
PH04 AUDIO OUT
SH01 TV. MONITOR SW
TV
MONI
SUB-BRIGHT
COLOUR
BRIGHT
CONT
SA02 AFC SW
OFF
ON
AUDIO DRIVE
Q602 2SC1815-O or Y
Q603 2SC2120-Y AUDIO OUT
Q604 2SA950-Y AUDIO OUT
DE EMPHASIS
DET
SOUND AMP
L602 TRF-6412
TP-21 0.15P-P(H)
L103 TRF-1454
L171 TRF-1455
7607AP
F. AFC
AFC DET
R611 FR18
L106 PL-15J
TP-12
TP-12 2.4VP-P(H)
Z102 5.5M TRAP
Q201 2SA1015-O or Y 1st VIDEO
Q202 2SA1015-O or Y 2nd VIDEO
Q203 2SA1015-Y 3rd VIDEO
Q203 2VP-P(H)
Q204 2SA1015-O or Y 4th VIDEO
X201 TRF-2041
D207 IS32
S201 SERVICE SW
NOR
SERV
Q205 2SC1815-O or Y BLANKING
D201 IS1555
D202 IS1555
D203 IS1555
D204
D205
D206
IS1555 x 3
Q501 TA7193P CHROMA
TP-42
TP-41
TP-44
TP-44 2VP-P(H)
BURST GATE
ACC AMP
ACC DET
GAIN CONT ROD AMP
KILLER AMP
POWER REGU
R-Y DEMO
CHROMA BURST AMP
KILLER & IDENT LEVEL COMPA
PAL SW
G-Y MATRIX
KILLER & IDENT DET
APC DET
IDENT AMP
B-Y DEMO
BURST
PHASE CONTROL
4.43MHz OSC
FLIP FLOP
GND
L501 PL-22J
L503 PL-22
L504 PL-6800J
L505 PL-100
X501 4.43M X'tal
T501 TRF-5420 DL. PHASE ADJ.
PL-8-2 L506
X502 1H. DL
R551 500(B) DL. ADJ
COLOR SYNC
(11V)
(110V)
L405 AZ-9004Y
U801 POWER BOARD PW 2487
2486-2(2/2)
QE02 2SC1815-Y MUTE SW
QE03 2SC1815-GR NOISE DET
QE04 2SA1015-Y SOUND MUTE
1815-GR AMP
LE01 PL-1500
Q301 2SA1015-Y SYNC SEP.
Q301 12VP-P(H)
VERT HOLD
VERT HEIGHT
Q302 2SC1815-Y VERT. OSC
Q303 2VP-P(H)
Q304 12VP-P(H)
Q304 2SC1815-Y VERT. AMP
Q304 2VP-P(H)
Q306 2SC2073(FA-1) VERT OUT
Q307 2SA1020-Y VERT. OUT
D302 IS1555
D303 IS1555
D304 IS1555
D305 IS1555
D403 S5295G
L403 TLN-2041
YEL
GRN
BLU
RED
JP401
D401 IS1555
D402 IS1555
L401 TLN-1023
Q401 2SA1015-Y HOR.OSC
Q402 2SC1959-Y HOR.DRIVE
T401 TLN-1029 HOR.DRIVE TRANS
Q404 2SC2233 (FA-1) HOR.OUT
F401
L406 HC4-035
L404 TLN-1015R
D404 IS2756
T461 TFB-30
HOR. OUT
AFC
Q402 16VP-P(H)
Q401 2VP-P(H)
Q401 10VP-P(H)
Q402 1VP-P(H)
Q404 8VP-P(H)
Q404 90VP-P(H)
D402 6VP-P(H)
D801 4B4B41
Q802 2SA1015-Y ERROR AMP
Q803 2SC1815-BL VOLT REGU. AMP
Q804 2SC1815-Y LED DRIVE
Q801 2SD553-Y APF REGU.
M801
D805
D806 IS1555
D807 IS1555
Z5.6A
R851 5K(B) +11V ADJUST
F803 2A
F801 315mAT
MAINS SW
P811
P812
P803 DC SOCKET
802 SOCKET
S803 DEGAUSS SW
L902 DEGAUSS COIL
TSB-2135
P902
D810 BR5134S STAND BY IND
M802

CAPACITOR and INDUCTOR

n, k = 1,000, M = 1,000,000.
schematic, all capacitor values less than 1 are
alues more than 1 in pF.
schematic, all inductor values more than 1 are
alues less than 1 in H.



TP-42 2VP-P(H)
Q507 3VP-P(H)
Q505 4VP-P(H)
Q505 80VP-P(H)
Q507 70VP-P(H)
PW2486-2 (1/2)
CRT SOCKET BOARD
PW2486-4
Q501
TA7193P
CHROMA
Q505
2SC2482
RED. OUT
Q507
2SC2482
GREEN
OUT
Q509
2SC2482
BLUE OUT
V901
140DCB22
(Y)
C:CRT
H-V
Z901 Z902 Z903 Z904
(1.5KV)(1.5KV)(1.5KV)(1.5KV)
R920
FR0.82
C902
1000
(1KV)
Z905
(6.0KV)
T501 TRF-5420
DL. PHASE ADJ.
X501
4.43M
X tal
X502
IH. DL
R551
500(B)
DL. ADJ
TP-44 2VP-P(H)
Q204
2SA1015-OorY
4th VIDEO
S201
SERVICE SW
NOR
SERV
Q205
2SC1815-OorY
BLANKING
1S1555 x 3
D204 D205 D206
(110V)
Q509 4VP-P(H)
C309 15V P-P(H)
Q306
2SC2073(FA-1)
VERT
OUT
Q307
2SA1020-Y
VERT. OUT
L462
DEFLECTION
YOKE
TDY-3050B
YEL
GRN
BLU
RED
P401
L403
TLN-2041
D403
S5295G
R418
FR10
F401
L406
HC4-035
D404
1S2756
L404
TLN-1015R
Q404
2SC2233 (FA-1)
HOR.OUT
HOR.DRIVE
TRANS
AFC
T461
TFB-3058B
HOR. OUTPUT TRANS
M606
SCREEN
FOCUS
Z411
TPA-6015
SN:23115688
FOCUS PACK
R478
R620
C473
10µ
(16V)
Q404 8VP-P(H)
Q404 90VP-P(H)

RESISTOR

Type	Mark
Carbon Composition	S
Oxide Metal Film	R
Insulated Carbon Film	P
Wire Wound	W
Cement	No Mark
Variable Resistor	⧄
Positive Thermistor	⧄
Negative Thermistor	⧄
Chip Resistor	R

Table 1

Watt	Mark
1/16 W	••
1/8 W	•
1/4 W	⊠
1/2 W	⧄
1 W	1
2 W	2
3 W	3
5 W	5
10 W	10
15 W	15
20 W	20
25 W	25

Table 2

CAPACITOR

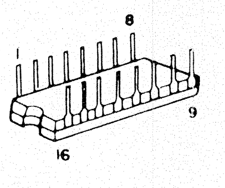
Volt	Mark
6.3V	× ×
10V	××
16V	○ ○
25V	○○
35V	○●
50V	● ●
160～350V	=
350～630V	≡
2.5KV	□□
Chemical	+ −
Chemical Non Polar	⊣⊢
Chip Capacitor	C

Table 3

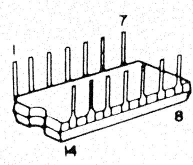
TERMINAL VIEWS OF IC'S AND TRANSISTORS

IC's

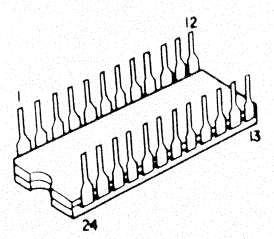
① TA7607AP
TA7632P



② TC-4011BP
TC-4001BP

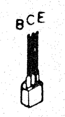


③ TA193P

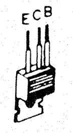


TRANSISTORS

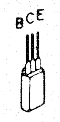
① 2SC388ATM
2SC1815
2SA1015
2SA950
2SC2120
2SC1959



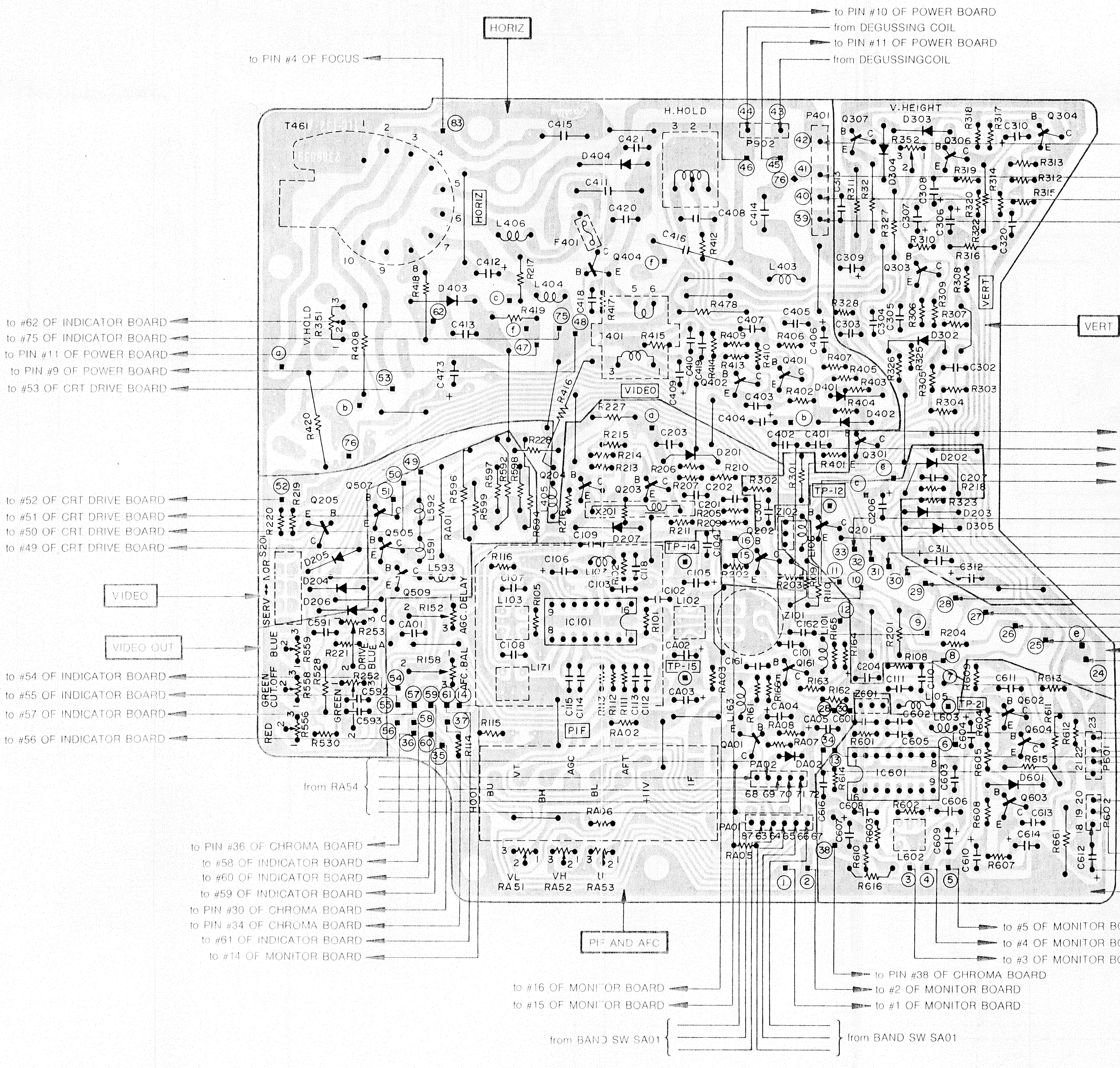
② 2SD553
2SC2233
2SC2073



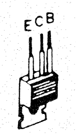
③ 2SA1020
2SC2482



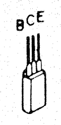
MAIN BOARD PW2486-1
BOTTOM (FOIL) SIDE


HORIZ
to PIN #4 OF FOCUS
to PIN #10 OF POWER BOARD
from DEGUSSING COIL
to PIN #11 OF POWER BOARD
from DEGUSSINGCOIL
T461
H.HOLD
V.HEIGHT
P401
P902
Q307
D303
Q304
Q306
C415
C421
D404
C411
C420
L406
F401
Q404
C412
R217
L404
D403
R418
V.HOLD
R351
R408
R419
C413
T401
R415
R417
L403
R478
C408
C414
C416
R412
C313
VERT
to #62 OF INDICATOR BOARD
to #75 OF INDICATOR BOARD
to PIN #11 OF POWER BOARD
to PIN #9 OF POWER BOARD
to #53 OF CRT DRIVE BOARD
to #52 OF CRT DRIVE BOARD
to #51 OF CRT DRIVE BOARD
to #50 OF CRT DRIVE BOARD
to #49 OF CRT DRIVE BOARD
VIDEO
VIDEO OUT
to #54 OF INDICATOR BOARD
to #55 OF INDICATOR BOARD
to #57 OF INDICATOR BOARD
to #56 OF INDICATOR BOARD
R420
C473
R416
R227
R228
R215
R214
R213
Q204
Q203
Q202
Q201
Q205
Q507
Q505
Q509
Q401
Q402
Q301
D201
D202
D203
D204
D205
D206
D207
D305
D302
D401
D402
X201
TP-12
TP-14
TP-15
TP-21
IC101
IC601
L103
L102
L171
L592
L591
L593
RA01
RA02
RA03
RA05
RA06
RA07
RA08
R596
R597
R598
R599
R592
R594
R152
R158
R253
R252
R221
R559
R558
R528
R556
R530
R219
R220
C591
C592
C593
CA01
CA02
CA03
CA04
CA05
SERV ↔ NOR S201
BLUE
GREEN CUT.OFF
RED
GREEN
DRIVE BLUE
AGC DELAY
AFC BAL
R116
R105
R115
R114
C106
C107
C108
C109
C105
C102
C103
C101
R101
R102
R103
C115
C114
R113
R112
R111
C113
C112
C118
PIF
H001
BU
VT
BH
AGC
BL
AFT
+11V
IF
RA51
RA52
RA53
VL
VH
U
QA01
PA01
PA02
DA02
L163
R161
R162
R163
R165
R164
Z101
Z102
Q161
C161
C162
L101
R201
R204
R108
C204
C111
C110
L105
Z601
C602
L603
C601
C605
R601
R602
R603
R604
R605
R608
R609
R610
R611
R612
R613
R614
R615
R616
R607
L602
Q601
Q602
Q603
Q604
D601
C603
C604
C606
C607
C608
C609
C610
C611
C612
C613
C614
C616
R661
P601
P602
R401
R402
R403
R404
R405
R406
R407
R409
R410
R413
R414
C401
C402
C403
C404
C405
C406
C407
C409
C410
C419
C418
R301
R302
R303
R304
R305
R307
R308
R309
R310
R311
R312
R313
R314
R315
R316
R318
R319
R320
R321
R322
R323
R325
R326
R327
R328
R352
R317
C302
C303
C304
C305
C306
C307
C308
C309
C310
C311
C312
C320
C206
C207
Q303
R218
R206
R207
R205
R209
R210
R211
C201
C202
C203
R203
from RA54
to PIN #36 OF CHROMA BOARD
to #58 OF INDICATOR BOARD
to #60 OF INDICATOR BOARD
to #59 OF INDICATOR BOARD
to PIN #30 OF CHROMA BOARD
to PIN #34 OF CHROMA BOARD
to #61 OF INDICATOR BOARD
to #14 OF MONITOR BOARD
PIF AND AFC
to #16 OF MONITOR BOARD
to #15 OF MONITOR BOARD
from BAND SW SA01
from BAND SW SA01
to PIN #38 OF CHROMA BOARD
to #2 OF MONITOR BOARD
to #1 OF MONITOR BOARD
to #5 OF MONITOR BO
to #4 OF MONITOR BO
to #3 OF MONITOR BO
68 69 70 71 72
87 63 64 65 66 67

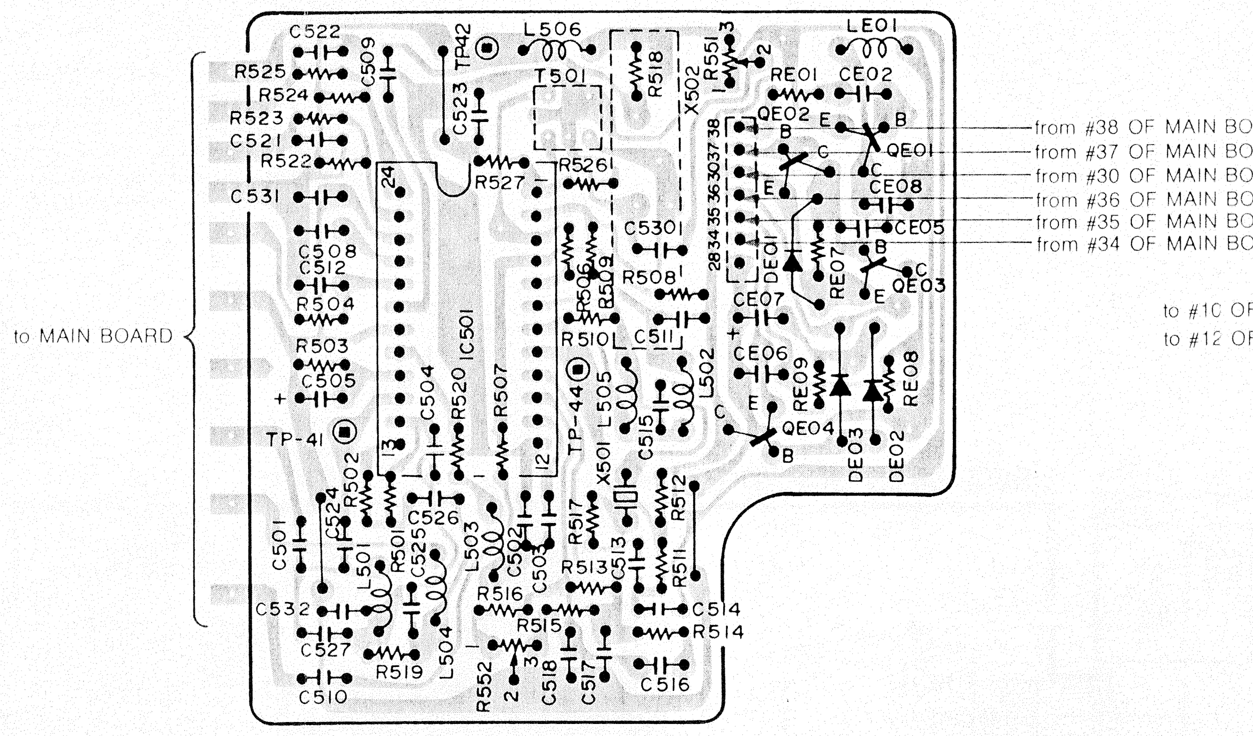
② 2SD553
2SC2233
2SC2073



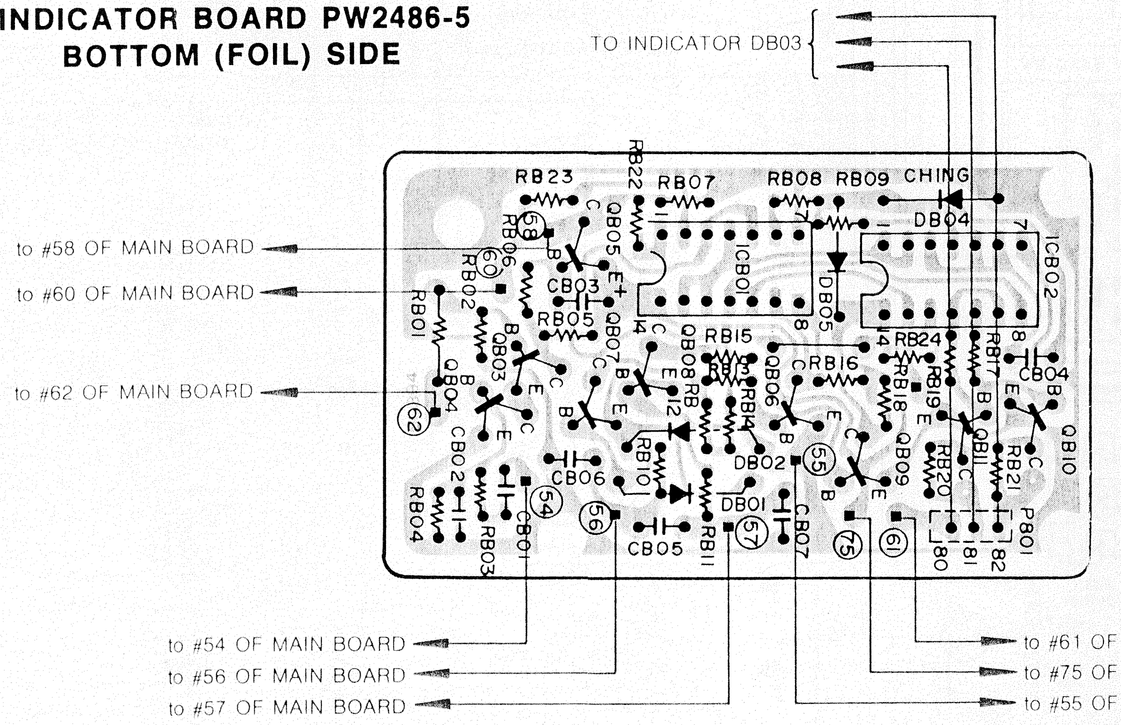
③ 2SA1020
2SC2482

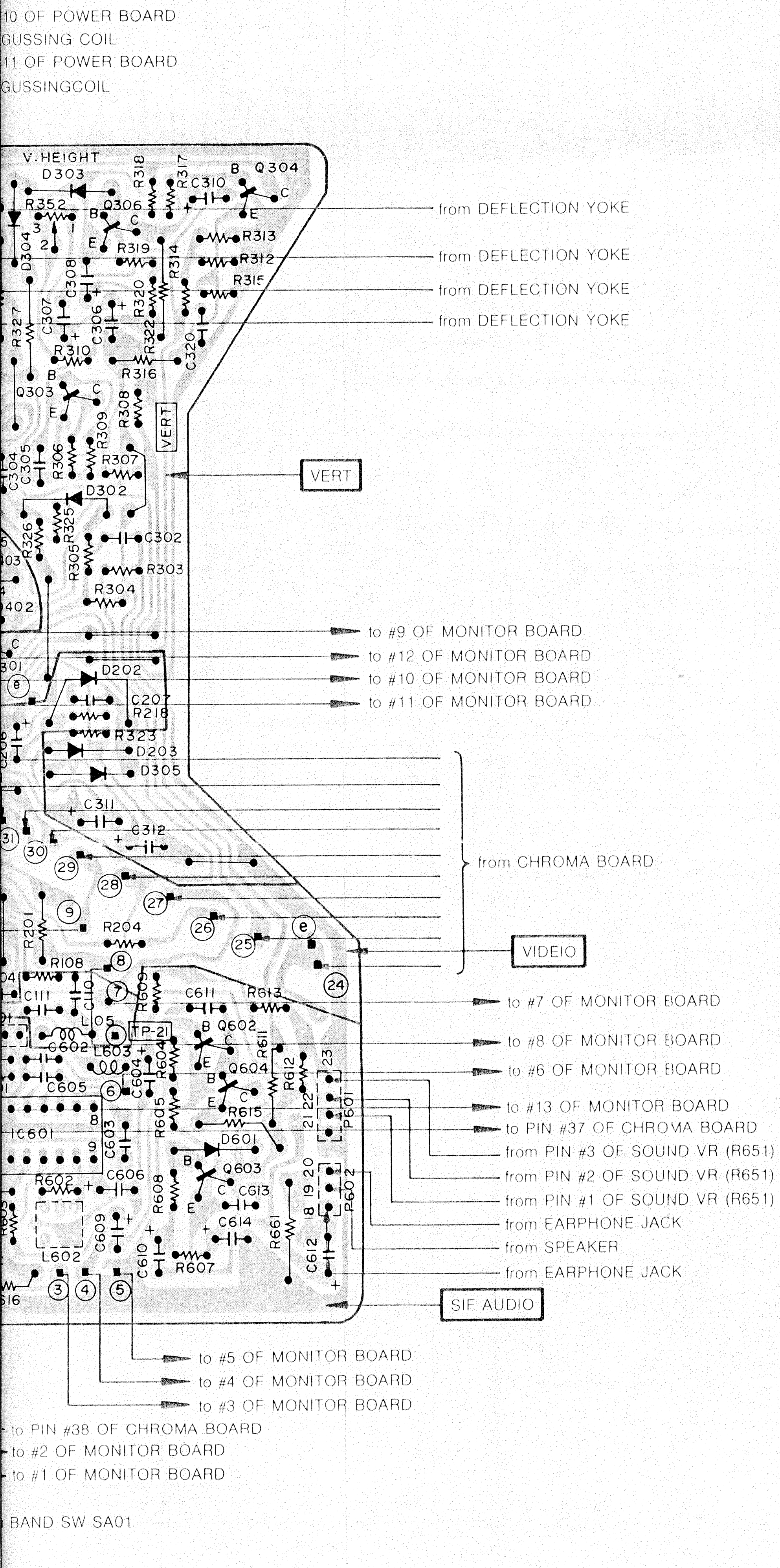


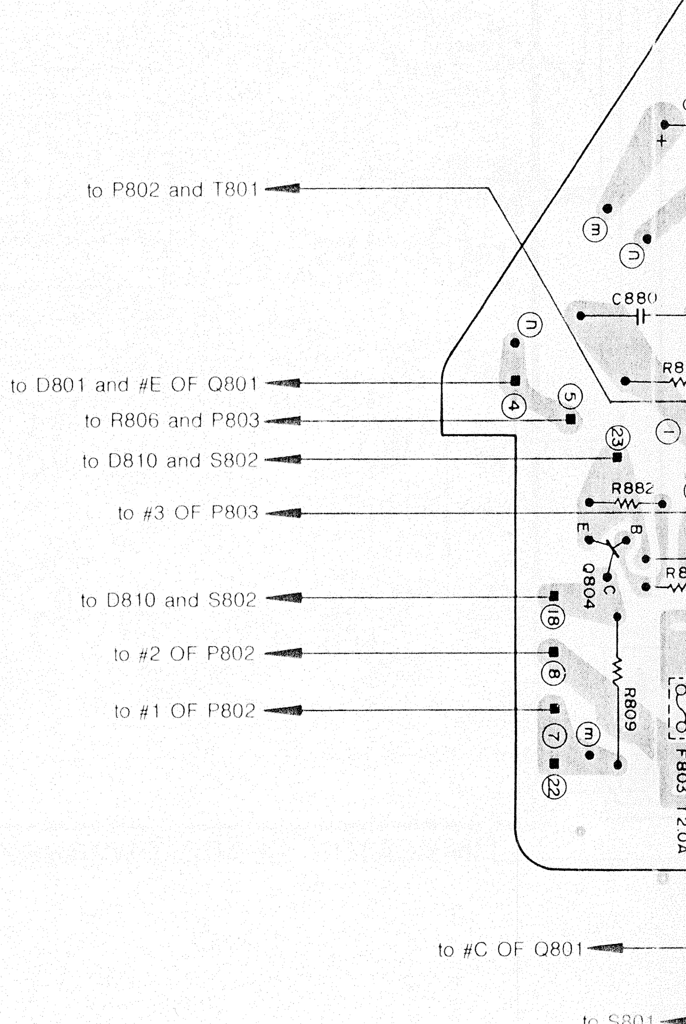
CHROMA BOARD PW2486-2
BOTTOM (FOIL) SIDE


to MAIN BOARD
from #38 OF MAIN BO
from #37 OF MAIN BO
from #30 OF MAIN BO
from #36 OF MAIN BO
from #35 OF MAIN BO
from #34 OF MAIN BO
to #1C OF
to #12 OF
C522
R525
R524
C509
R523
C521
R522
C531
C523
TP42
L506
T501
R527
R526
R518
X502
R551
LE01
RE01
CE02
QE02
QE01
CE08
CE05
DE01
RE07
QE03
C508
C512
R504
R503
C505
TP-41
IC501
C504
R520
R507
R506
R509
C5301
R508
CE07
R510
C511
TP-44
L505
L502
CE06
RE09
RE08
QE04
DE03
DE02
C515
X501
R512
R502
C524
C526
C501
L501
R501
C525
L503
C502
C503
R517
C513
R513
R511
C532
R516
R515
C514
R514
C527
R519
L504
R552
C518
C517
C516
C510

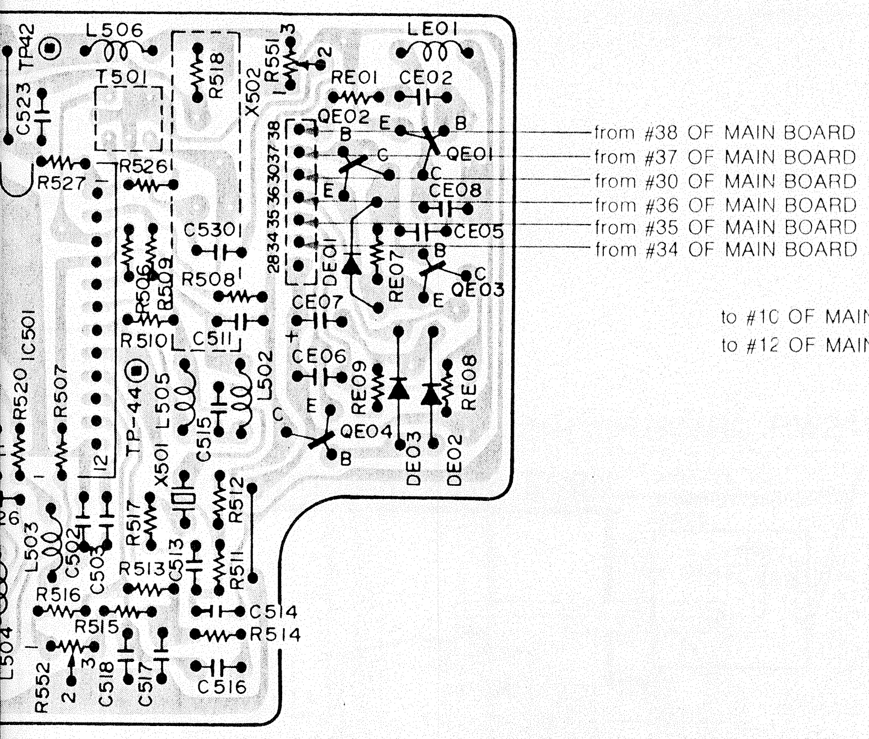
INDICATOR BOARD PW2486-5
BOTTOM (FOIL) SIDE


TO INDICATOR DB03
to #58 OF MAIN BOARD
to #60 OF MAIN BOARD
to #62 OF MAIN BOARD
to #54 OF MAIN BOARD
to #56 OF MAIN BOARD
to #57 OF MAIN BOARD
to #61 OF
to #75 OF
to #55 OF
RB23
RB22
RB07
RB08
RB09
CHING
DB04
IC801
IC802
QB05
RB06
RB02
RB01
CB03
RB05
QB07
DB05
QB03
RB15
QB08
RB13
RB16
RB24
RB17
RB18
RB19
CB04
QB04
RB12
RB14
QB06
QB11
QB10
RB20
RB21
RB10
DB02
QB09
CB02
CB06
RB04
RB03
CB01
DB01
CB07
CB05
RB11
P801
80
81
82


10 OF POWER BOARD
GUSSING COIL
11 OF POWER BOARD
GUSSINGCOIL
V.HEIGHT
D303
R318
R317
C310
Q304
R352
Q306
R313
R319
R312
R314
R315
D304
C308
C306
C307
R320
R322
R327
R310
R316
C320
Q303
R309
R308
VERT
C304
C305
R306
R307
D302
R325
R326
C302
R305
R303
R304
from DEFLECTION YOKE
from DEFLECTION YOKE
from DEFLECTION YOKE
from DEFLECTION YOKE
VERT
to #9 OF MONITOR BOARD
to #12 OF MONITOR BOARD
to #10 OF MONITOR BOARD
to #11 OF MONITOR BOARD
D202
C207
R218
R323
D203
D305
C311
C312
from CHROMA BOARD
VIDEIO
R201
R204
R108
C111
C110
L05
C611
R613
R609
TP-21
Q602
C602
L603
R604
R611
Q604
C605
R612
R615
IC601
C603
R605
D601
C606
R602
Q603
C613
R608
C614
C609
R661
L602
C610
R607
C612
P601
P602
SIF AUDIO
to #7 OF MONITOR BOARD
to #8 OF MONITOR BOARD
to #6 OF MONITOR BOARD
to #13 OF MONITOR BOARD
to PIN #37 OF CHROMA BOARD
from PIN #3 OF SOUND VR (R651)
from PIN #2 OF SOUND VR (R651)
from PIN #1 OF SOUND VR (R651)
from EARPHONE JACK
from SPEAKER
from EARPHONE JACK
to #5 OF MONITOR BOARD
to #4 OF MONITOR BOARD
to #3 OF MONITOR BOARD
to PIN #38 OF CHROMA BOARD
to #2 OF MONITOR BOARD
to #1 OF MONITOR BOARD
BAND SW SA01

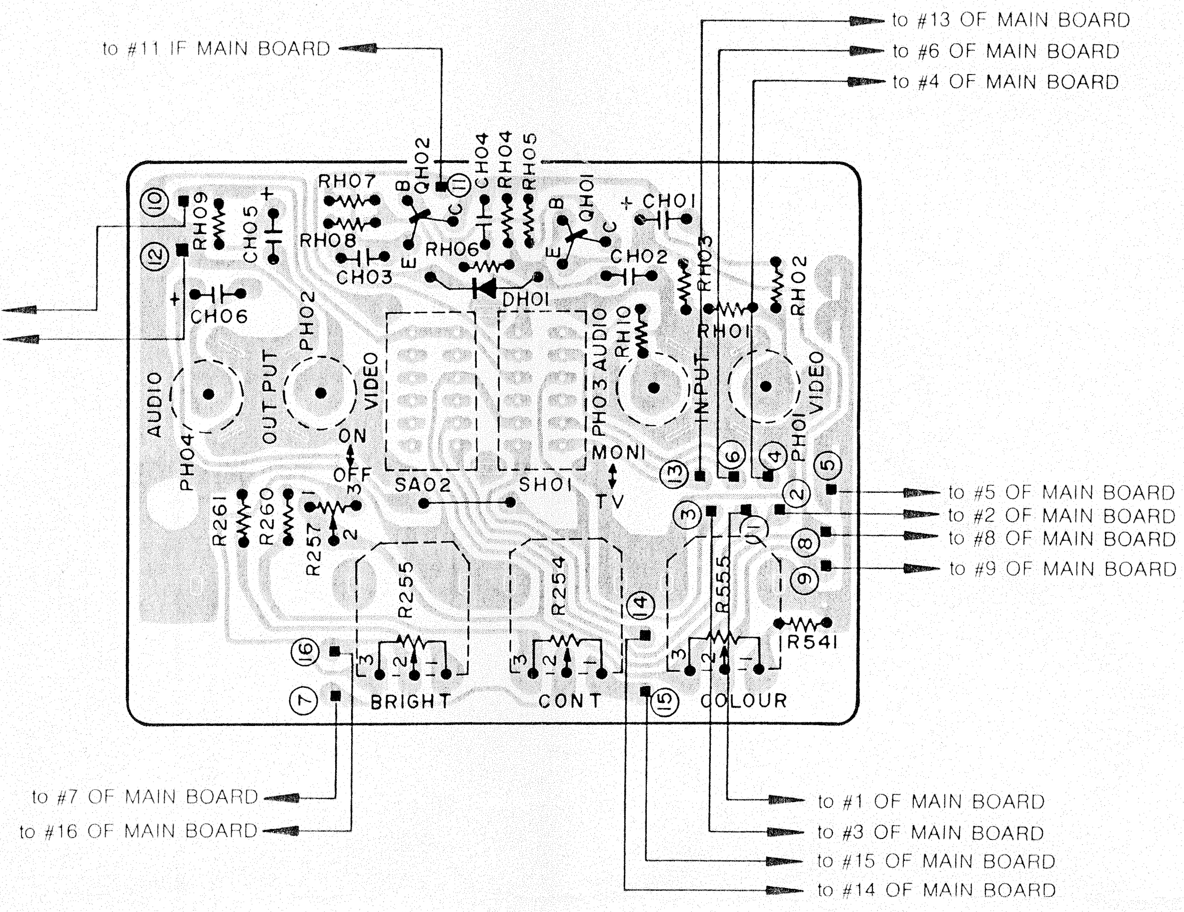

to P802 and T801
C880
to D801 and #E OF Q801
to R806 and P803
to D810 and S802
R882
to #3 OF P803
Q804
to D810 and S802
to #2 OF P802
to #1 OF P802
R809
to #C OF Q801
to S801

OMA BOARD PW2486-2
OTTOM (FOIL) SIDE



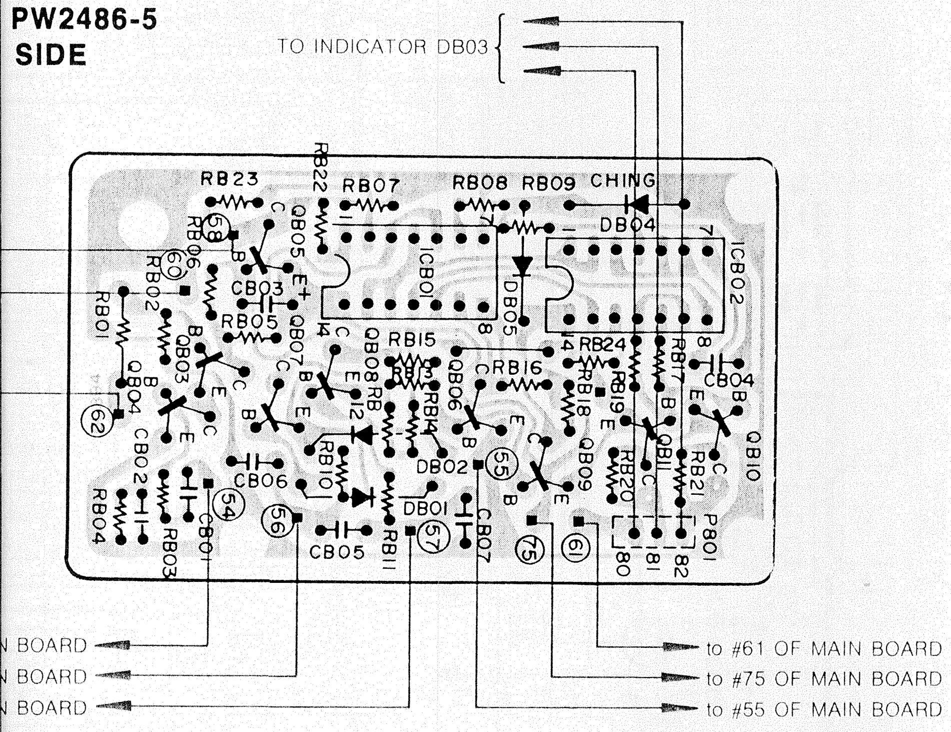
from #38 OF MAIN BOARD
from #37 OF MAIN BOARD
from #30 OF MAIN BOARD
from #36 OF MAIN BOARD
from #35 OF MAIN BOARD
from #34 OF MAIN BOARD
L506
LE01
T501
R518
X502
R551
RE01
CE02
QE02
QE01
R527
R526
CE08
C5301
CE05
DE01
RE07
QE03
R508
C511
CE07
CE06
R510
TP-44
L505
L502
RE09
RE08
QE04
DE03
DE02
IC501
R520
R507
C523
TP42
X501
R517
R512
R513
R511
L503
C502
C503
R516
R515
C514
R514
R552
C518
C517
C516
L504

MONITOR BOARD PW2486-3
BOTTOM (FOIL) SIDE



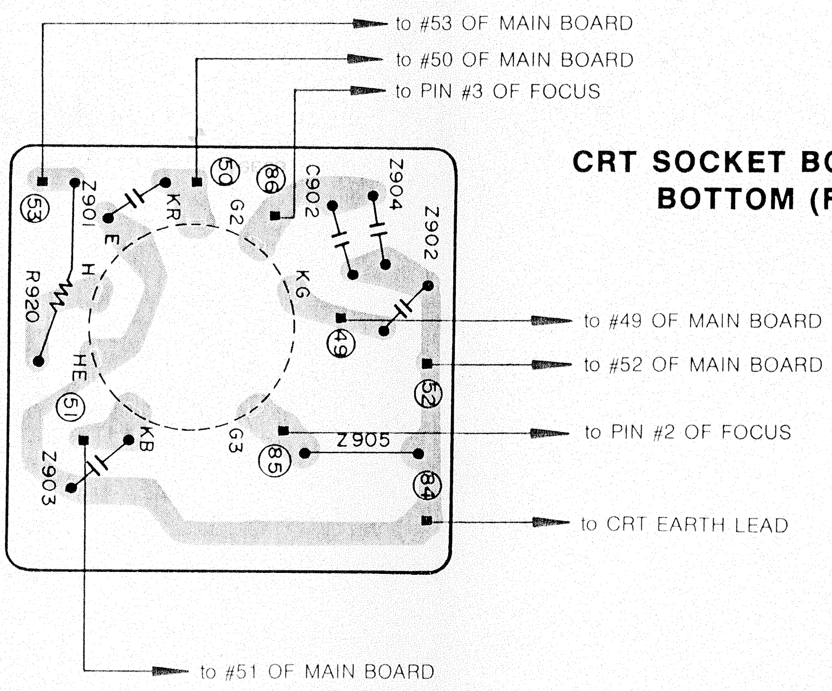
to #11 IF MAIN BOARD
to #13 OF MAIN BOARD
to #6 OF MAIN BOARD
to #4 OF MAIN BOARD
to #10 OF MAIN BOARD
to #12 OF MAIN BOARD
to #5 OF MAIN BOARD
to #2 OF MAIN BOARD
to #8 OF MAIN BOARD
to #9 OF MAIN BOARD
to #7 OF MAIN BOARD
to #16 OF MAIN BOARD
to #1 OF MAIN BOARD
to #3 OF MAIN BOARD
to #15 OF MAIN BOARD
to #14 OF MAIN BOARD
RH07
QH02
CH04
RH04
RH05
QH01
CH01
RH09
CH05
RH08
RH06
CH03
CH02
DH01
CH06
PH02
RH03
RH02
RH01
RH10
AUDIO
PH04
OUT PUT
VIDEO
ON
OFF
PH03
AUDIO
MONI
TV
INPUT
PH01
VIDEO
SA02
SH01
R261
R260
R257
R255
R254
R555
R541
BRIGHT
CONT
COLOUR

PW2486-5
SIDE



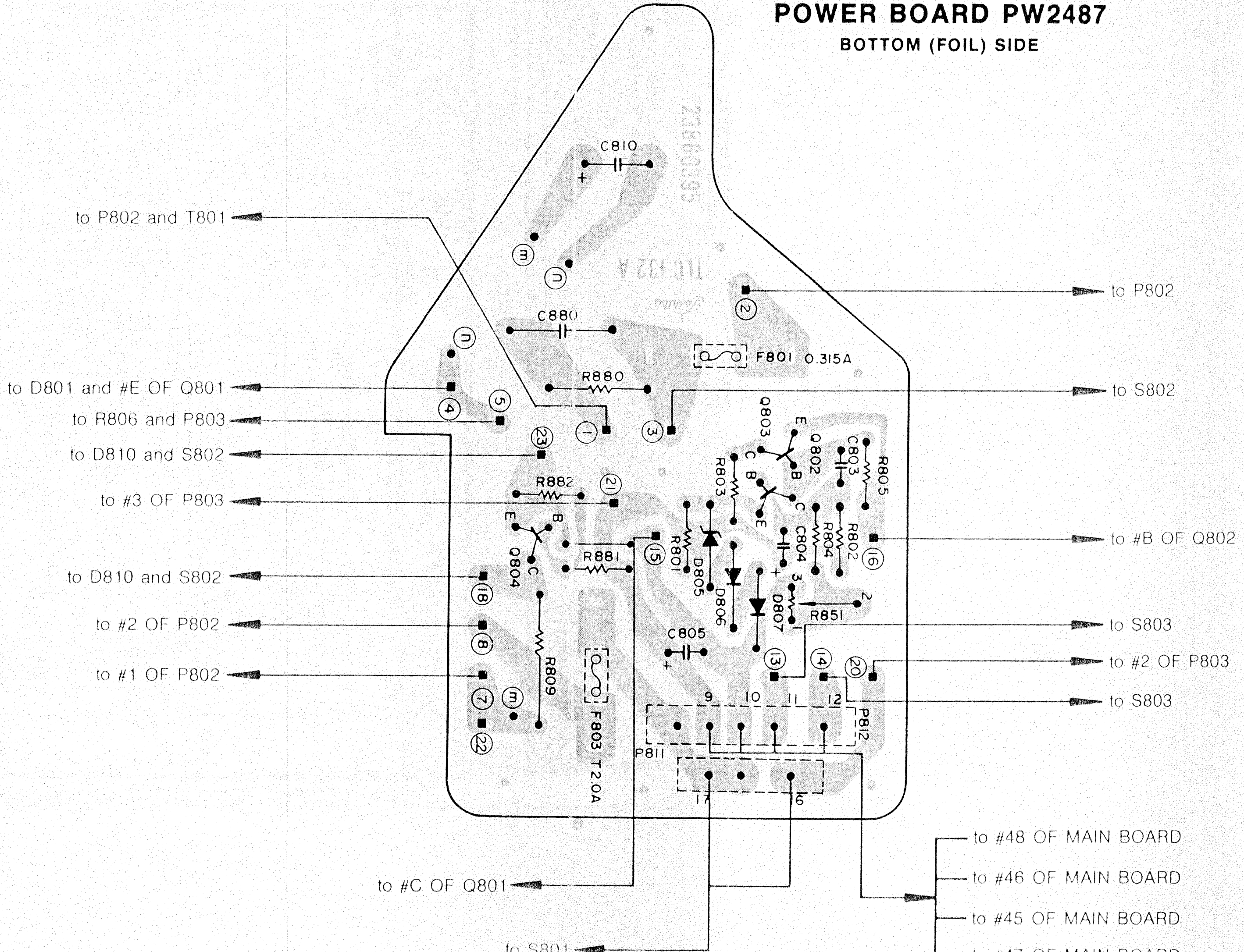
TO INDICATOR DB03
RB23
RB22
RB07
RB08
RB09
CHING
DB04
QB05
ICB01
ICB02
DB05
RB06
RB02
RB01
CB03
RB05
QB07
QB03
RB15
RB13
QB08
RB16
RB24
RB17
CB04
QB04
QB12
RB14
RB18
RB19
QB11
RB21
QB10
RB10
QB06
QB09
RB20
CB02
CB06
DB02
RB04
RB03
CB01
DB01
RB11
CB07
CB05
P801
N BOARD
N BOARD
N BOARD
to #61 OF MAIN BOARD
to #75 OF MAIN BOARD
to #55 OF MAIN BOARD

CRT SOCKET BOARD PW2486-4
BOTTOM (FOIL) SIDE



to #53 OF MAIN BOARD
to #50 OF MAIN BOARD
to PIN #3 OF FOCUS
to #49 OF MAIN BOARD
to #52 OF MAIN BOARD
to PIN #2 OF FOCUS
to CRT EARTH LEAD
to #51 OF MAIN BOARD
Z901
KR
G2
C902
Z904
Z902
R920
H
KG
HE
KB
G3
Z905
Z903

POWER BOARD PW2487
BOTTOM (FOIL) SIDE



to P802 and T801
to D801 and #E OF Q801
to R806 and P803
to D810 and S802
to #3 OF P803
to D810 and S802
to #2 OF P802
to #1 OF P802
to #C OF Q801
to S801
to P802
to S802
to #B OF Q802
to S803
to #2 OF P803
to S803
to #48 OF MAIN BOARD
to #46 OF MAIN BOARD
to #45 OF MAIN BOARD
C810
TLC-132 A
C880
F801 0.315A
R880
Q803
Q802
C803
R805
R803
R882
Q804
R881
R801
D805
D806
CB04
R804
R802
D807
R851
C805
R809
F803 T2.0A
P812
P811